UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

This document has been electronically approved and signed.

DATE: May 6, 2015

BALLOT VOTE SHEET

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Stephanie Tsacoumis, General Counsel
Patricia H. Adkins, Executive Director

FROM: Patricia M. Pollitzer, Assistant General Counsel
Hyun S. Kim, Attorney, OGC

SUBJECT: Proposed Rule to Amend the Safety Standard for Architectural Glazing Materials

BALLOT VOTE DUE May 12, 2015

The Office of the General Counsel is providing for Commission consideration the attached draft proposed rule for publication in the *Federal Register*. The proposed rule would amend the Commission's rule at 16 C.F.R. part 1201 by replacing the testing procedures provided at 16 C.F.R. § 1201.4 with the voluntary standard, ANSI Z97.1-2009[c2] *American National Standard for Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test.*

Please indicate your vote on the following options:

I. Approve publication of the attached document in the *Federal Register*, as drafted.

_____ _____
(Signature) (Date)

II. Approve publication of the attached document in the *Federal Register*, with changes. (Please specify.)

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_____ _____

(Signature) (Date)

III. Do not approve publication of the attached document in the *Federal Register*.

_____ _____

(Signature) (Date)

IV. Take other action. (Please specify.)

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_____ _____

(Signature) (Date)

Attachment: Draft *Federal Register* Notice: Notice of proposed rulemaking; Safety Standard for Architectural Glazing Materials

Billing Code 6355-01-P

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1201

[CPSC Docket No. CPSC-2012-0049]

Safety Standard for Architectural Glazing Materials

AGENCY: Consumer Product Safety Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Consumer Product Safety Commission ("CPSC" or "Commission") is proposing an amendment to the Safety Standard for Architectural Glazing Materials (16 CFR part 1201) to clarify certain test procedures specified in the standard. The CPSC proposes to replace the testing procedures for glazing materials in certain architectural products, set forth in 16 CFR 1201.4, with the testing procedures contained in the voluntary standard, ANSI Z97.1-2009$^{\epsilon 2}$, *American National Standard for Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test.*

DATES: Written comments must be received by [INSERT DATE THAT IS 60 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may submit comments, identified by Docket No. CPSC-2012-0049, by any of the following methods:

Electronic Submissions: Submit electronic comments to the Federal eRulemaking Portal at: http://www.regulations.gov. Follow the instructions for submitting comments. The Commission does not accept comments submitted by electronic mail (e-mail), except through www.regulations.gov. The Commission encourages you to submit electronic comments by using the Federal eRulemaking Portal, as described above.

Written Submissions: Submit written submissions by mail/hand delivery/courier to: Office of the Secretary, Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814; telephone (301) 504-7923.

Instructions: All submissions received must include the agency name and docket number for this notice. All comments received may be posted without change, including any personal identifiers, contact information, or other personal information provided, to: http://www.regulations.gov. Do not submit confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If furnished at all, such information should be submitted in writing.

Docket: For access to the docket to read background documents or comments received, go to: http://www.regulations.gov, and insert the docket number CPSC-2012-0049, into the "Search" box, and follow the prompts.

FOR FURTHER INFORMATION CONTACT: Brian Baker, Project Manager, Division of Mechanical Engineering, Directorate for Laboratory Sciences, Office of Hazard Identification and Reduction, Consumer Product Safety Commission, 5 Research Place, Rockville, MD 20850; telephone: 301-987-2289; bbaker@cpsc.gov.

SUPPLEMENTARY INFORMATION:

I. *Background*

A. *Safety Standard for Architectural Glazing Materials*

On January 6, 1977 (42 FR 1427), as amended on June 20, 1977 (42 FR 31164), the Commission issued the Safety Standard for Architectural Glazing Materials under the Consumer Product Safety Act ("CPSA") to reduce or eliminate risks of injuries associated with walking, running, or falling through or against glazing materials ("CPSC standard").

The standard applies to glazing materials used or intended for use in any of the following architectural products:

(1) Storm doors or combination doors;

(2) Doors (both exterior and interior);

(3) Bathtub doors and enclosures;

(4) Shower doors and enclosures; and

(5) Sliding glass doors (patio-type).

The standard applies to glazing materials and architectural products incorporating glazing materials that are produced or distributed for sale to or for the personal use, consumption or enjoyment of consumers in or around a permanent or temporary household or residence or in recreational, school, public, or other buildings or parts thereof. The standard was codified at 16 CFR part 1201.

The standard exempts the following products, materials, and uses:

(1) Wired glass used in doors or other assemblies to retard the passage of fire where required by federal, state, local, or municipal fire ordinance;

(2) Louvers of jalousie doors;

(3) Openings of doors which a 3 inch diameter sphere is unable to pass;

(4) Carved glass (as defined in section 1201.2(a)(36)), dalle glass (as defined in § 1201.2(a)(37)), or leaded glass (as defined in section 1201.2(a)(14)), which is used in doors and glazed panels (as defined in sections 1201.2(a)(7) and (a)(10)) if the glazing material meets all of the following criteria:

(i) The coloring, texturing, or other design qualities or components of the glazing material cannot be removed without destroying the material; and

(ii) The primary purpose of such glazing is decorative or artistic; and

(iii) The glazing material is conspicuously colored or textured so as to be plainly visible and plainly identifiable as aesthetic or decorative rather than functional (other than for the purpose of admitting or controlling admission of light components or heat and cold); and

(iv) The glazing material, or assembly into which it is incorporated, is divided into segments by conspicuous and plainly visible lines.

(5) Glazing materials used as curved glazed panels in revolving doors; and

(6) Commercial refrigerator cabinet glazed doors.

16 CFR 1201.1(c).

On September 27, 1978, (43 FR 43704), the Commission amended the standard to clarify the definitions, description of test apparatus, and test procedures in the standard. The Commission stated that under the CPSA, when an amendment to a consumer product safety rule involves a material change, the procedures in section 7 and 9 apply. 15 U.S.C. 2058(h). The Commission determined, however, that the amendments to the definitions, test apparatus, and test procedures did not involve a material change to the standard because they did not affect the basic purpose and provisions of the standard. (42 FR 53798, 53799 (Oct. 3, 1977); 43 FR 43704 (Sept. 27, 1978.) Accordingly, the Commission did not apply the provisions of sections 7 and 9 of the CPSA. However, the Commission provided notice and comment under the informal rulemaking procedures of the Administrative Procedure Act ("APA"), 5 U.S.C. 553, before issuing a final rule.

The Commission subsequently revoked portions of the standard that prescribed requirements for "glazed panels" (45 FR 67383, August 28, 1980); an accelerated environmental durability test for plastic glazing materials intended for outdoor exposure (45 66002, October 6,

1980); and a modulus of elasticity test, a harness test, and an indoor aging test applicable to plastic glazing materials (47 FR 27853, June 28, 1982). 16 CFR 1201.1(d) n.1. Tempered glass, wired glass, and annealed glass are also exempt from the accelerated environmental durability tests. 16 CFR 1201.4(a)(2).

The testing procedures currently set forth in 16 CFR 1201.4 require impact tests and accelerated environment durability tests for non-exempted materials, which are intended to determine if glazing materials used in these architectural products meet safety requirements designed to reduce or eliminate unreasonable risks of death or serious injury to consumers when glazing material is broken by human contact. The testing procedures further describe the testing equipment and apparatus required to be used, and the test result interpretation methodology to be employed in determining if the glazing materials being tested meet the safety requirements of the standard.

B. *Petition Request*

On June 26, 2012, the Commission received a petition from the Safety Glazing Certification Council ("SGCC" or "petitioner"), requesting that the Commission initiate rulemaking to replace the testing procedures for glazing materials in certain architectural products, as set forth in 16 CFR 1201.4, with the testing procedures contained in the voluntary standard, ANSI Z97.1-2009$^{\epsilon 2,}$ *American National Standard for Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test* (the ANSI standard). SGCC stated that consumers and the glazing industry would be better served if the test procedures for glazing materials used in architectural products set forth in 16 CFR 1201.4 were replaced with the ANSI standard test procedures because the ANSI test procedures are more efficient and modern. The petitioner asserts that the testing procedures

set forth in section 1201.4 were promulgated in 1977, and they have not been updated or clarified, as necessary. The petitioner stated that the ANSI standard for glazing materials has been updated periodically (in 1984, 1994, 2004, and 2009), unlike the CPSC standard, and that these updates include modifications in testing equipment and procedures. Petitioner asserted that the absence of updates to the CPSC standard during a period in which the ANSI standard was revised four times has resulted in different testing methods and qualifying procedures that have created confusion in the industry regarding which test methodology must be used in what circumstance. Petitioner claimed that the existence of overlapping but divergent CPSC and voluntary standards has resulted in manufacturers paying for duplicative testing.

On August 30, 2012, notice of the petition was published in the *Federal Register* (77 FR 52625). The Commission received five comments, all supporting the petitioner's request to amend the existing test procedures with the ANSI standard. The petition was referred to the Commission's staff for evaluation. On April 3, 2013, CPSC staff submitted a briefing package to the Commission evaluating the petition, including the feasibility of integrating the test procedures of the ANSI standard into the CPSC standard.[1] On April 9, 2013, the Commission voted to grant the petition.

On May 6, 2015, CPSC staff submitted a briefing package to the Commission recommending that the Commission issue a proposed amendment to 16 CFR 1201.4 that would replace the testing procedures set forth in the CPSC mandatory standard for glazing materials in certain architectural products, with the testing procedures contained in the

[1]http://www.cpsc.gov//Global/Newsroom/FOIA/CommissionBriefingPackages/2013/ArchitecturalGlazingPetitionBriefingPackage.pdf

voluntary standard, ANSI Z97.1-2009$^{\epsilon 2}$. The staff's briefing package is available on the CPSC's website at**: insert website link.**

C. *Statutory Authority*

The proposed amendment to the CPSC standard would clarify certain test procedures specified in the mandatory standard. Under section 9 (h) of the CPSA, if an amendment of a consumer product safety rule "involves a material change," 15 U.S.C. 2058(h), the Commission must make certain findings, including a finding that the amendment is "reasonably necessary to prevent or reduce an unreasonable risk of injury associated with such product"; the expected benefits of the amended rule "bear a reasonable relationship to its costs"; and the amended rule imposes "the least burdensome requirement which prevents or adequately reduces the risk of injury for which the rule is being promulgated." *Id.* §§ 2056(a); 2058(a)-(g). If the amendment does not constitute "a material change" for purposes of section 9(h) of the CPSA, the Commission is not required to make the findings that are otherwise required for the amendment of a consumer product safety rule.

When the Commission previously amended the CPSC standard to clarify the definitions and the description of test apparatus and test procedures in the architectural glazing standard, the Commission determined that the amendments to the definitions, test apparatus, and test procedures did not involve a material change to the standard because the changes did not affect the basic purpose and provisions of the standard. (43 FR 43704, September 27, 1978). However, the Commission did not elaborate on what changes might affect the basic purpose of a standard.

To assess what types of changes may result in a material change for the proposed amendment, the Commission looked to other statutory language for guidance. The Consumer

Product Safety Improvement Act ("CPSIA") directed the Commission to establish protocols and standards to test children's products for testing and certification purposes "when there has been a material change in the product's design or manufacturing process." 15 U.S.C. 2063(d)(2)(B). The Commission's regulation implementing this provision defines "material change" as: "any change in the product's design, manufacturing process or sourcing of component parts that . . . could affect a product's ability to comply with the applicable rules, bans, standards or regulations." 16 CFR 1107.2. This definition contemplates that certain changes would not be considered "material" if changes are not significant enough to potentially impact the product's ability to comply with applicable standards and regulations.

The basis for the Commission's findings in promulgating the standard for architectural glazing was that unreasonable risks of injury are associated with architectural glazing materials used in certain architectural glazing products. In assessing the question of whether unreasonable risks of injury or injury potential are associated with architectural glazing materials, the Commission balanced the degree, nature, and frequency of injury against the potential effect of the standard on the ability of architectural glazing materials to meet the need of the public and the effect of the standard on the cost, utility, and availability of architectural glazing materials to meet that need. 16 CFR 1201.1(d)(5).

Consistent with this prior analysis, for the proposed amendment, the Commission has reviewed whether the proposed amendment would alter the original basic purpose of the rule addressing an unreasonable risk of injury associated with architectural glazing materials, including whether the proposed amendment would have an important or significant impact on the safety of consumers or on the burdens imposed on the regulated industry. In particular, to assess whether the basic purpose and provisions of the standard would be altered, the

Commission compared the existing CPSC test procedures in the mandatory standard with the ANSI test procedures. The basic purpose of 16 CFR 1201.4 is to provide test procedures that will assess the safety of architectural glazing materials. The mandatory standard was promulgated to reduce or eliminate risks of injuries associated with walking, running, or falling through or against glazing materials in storm doors, doors (both exterior and interior), shower and bathtub doors and enclosures, and sliding or patio-type doors. The adoption of the ANSI test procedures will not alter that purpose. As discussed in section II below, the proposed amended testing procedures will clarify the existing test procedures and update references to current test methods.

In addition, the Commission reviewed whether there would be an important or significant impact on the safety of consumers. As discussed in section IV below, CSPC staff's review showed that almost all of the samples tested both to 16 CFR 1201.1 and the ANSI standard passed both standards; only a small number of samples tested (5 out of more than 3,500) failed the CPSC standard testing, but passed when tested to the voluntary standard. Thus, the proposed amendment is unlikely to have an important or significant impact on the safety of consumers because testing to either standard provided consistent and comparable test results.

The Commission also reviewed whether there would be any important or significant impact on the burdens imposed on the regulated industry. As discussed in section V below, CPSC staff's review showed existing widespread compliance with the ANSI standard. Therefore, the data did not show that adoption of the ANSI test procedures would impose any additional burdens on the regulated industry. In fact, a slight reduction in the burdens imposed on the regulated industry is likely because the proposed amendment would reduce confusion in the industry regarding applicable test procedures. Moreover, adoption of the

ANSI test procedures likely will make testing of the architectural glazing materials more efficient, less costly, and reduce redundant testing for manufacturers who currently comply with the ANSI standard, as well as the CPSC mandatory standard.

Accordingly, as provided under section 9(h) of the CPSA, the Commission believes that the proposed amendment replacing the test procedures specified in the CPSC mandatory standard with the test procedures in the ANSI standard would not involve a material change requiring the procedures under sections 7 and 9 of the CPSA. However, because the proposed amendment would make revisions to an existing standard, the Commission is providing notice and comment under the informal rulemaking procedures of the APA, 5 U.S.C. 553, before issuing a final rule.

II. *The Proposed Amendment*

A. No Change in Scope

The proposed amendment would replace the test procedures in the CPSC standard at 16 CFR 1201.4 with the ANSI test procedures. The ANSI standard covers certain products, materials, and uses that are exempt from the CPSC standard. The proposed amendment would not change the scope of products, materials, or uses covered by the CPSC standard.

The CPSC standard currently exempts: wired glass used in doors or other assemblies to retard the passage of fire where required by federal, state, local, or municipal fire ordinance; louvers of jalousie doors; openings of doors which a 3 inch diameter sphere is unable to pass; carved glass, dalle glass, or leaded glass; glazing materials used as curved glazed panels in revolving doors; and commercial refrigerator cabinet glazed doors. 16 CFR 1201.1(c). In addition, the test procedures at 16 CFR 1201.4(a)(2) do not provide for accelerated environmental durability testing of plastic glazing materials because those tests were removed from 16 CFR part 1201 by the Commission in the early 1980s. (45 FR 66002,

October 6, 1980). Moreover, tempered glass, wired glass, and annealed glass are not required to be subjected to the accelerated environmental durability tests. *Id.* at § 1201.4(a)(2).

In contrast, the ANSI standard does not exempt any specific glazing materials. The ANSI testing procedures include testing for materials and products that are not covered by the CPSC standard: plastic glazing and fire-resistant wire-glass. Accordingly, the ANSI standard includes tests for certain items, such as fire-resistant wired glass and accelerated environmental durability testing for plastic glazing, which are otherwise exempt from the CPSC standard. Although the ANSI standard does not specifically exempt tempered glass, wired glass, and annealed glass from the accelerated environmental durability tests, the ANSI standard only requires plastic glazing and organic coated glass to be subjected to the accelerated environmental durability test. Tests in the ANSI standard that apply to materials, products, or uses that are exempt from the CPSC standard would not be included in the proposed amendment.

In the proposed amendment, the Commission does not propose to alter the scope or exemptions provided in the CPSC standard; materials that are exempt from 16 CFR part 1201 would continue to be exempt, and those exempt materials would not be subject to the ANSI test procedures. The proposed amendment, however, would adopt the ANSI standard for the remaining test procedures in the CPSC standard.

B. *Test Procedures for Glazing Materials*

The proposed amendment replacing the CPSC test procedures in 16 CFR 1201.4 with the ANSI test procedures will clarify the existing test procedures and update references to current test methods.

1. Obsolete references will be replaced with updated test methods

Currently, 16 CFR 1201.4(b)(3)(ii) refers to obsolete ASTM standard practices and equipment, which have been replaced in the ANSI standard (5.4.1.1, 5.4.1.2). For example, the simulated weathering test in the CPSC standard references two outdated ASTM standards:

- ASTM G26-70 - *Practice for Operating Light Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials*, was withdrawn by ASTM in 2000, and replaced with ASTM G155 - *Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*.
- The obsolete 1970 edition of ASTM D2565-70 - *Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications*, has been revised over the years; its current edition is ASTM D2565-99(2008).

For manufacturers who test to both the 16 CFR 1201.4 and the ANSI standard, using these withdrawn and obsolete versions of current standards can result in increased costs and duplication of testing if manufacturers are required to test to the earlier versions of these editions to meet the regulation and also test to the current versions of these standard practice test procedures to meet the voluntary standard. Furthermore, the old standards referenced in 16 CFR 1201.4 (b)(3)(ii) require obsolete test equipment that is currently not manufactured. By replacing the CPSC testing procedures with the updated references in the ANSI standard, the proposed amendment would allow the use of currently manufactured test equipment rather than the obsolete and outdated equipment referenced in section 1201.4(b)(3)(ii). The updated references would not involve a material change to the standard because changing these references to reflect current test methods would not alter the basic purpose of the CPSC standard.

2. *The ANSI impact tests are similar to the impact tests in section 1201.4(b)*

Although ANSI Z97.1-2009$^{\epsilon 2}$ has been modified several times since the CPSC standard was published, the impact tests of 16 CFR 1201.4(b) and ANSI Z97.1-2009$^{\epsilon 2}$ (5) are similar. The CPSC standard shows drawings of a Glass Impact Test Structure (Figures 1-5) that is similar to the drawing of the Impact Test Frame drawing in ANSI Z97.1-2009$^{\epsilon 2}$ (Figures 1-7), except for differences in the descriptive terms used for naming the parts of the test apparatus, *i.e*., Main Frame and Sub-Frame in ANSI Z97.1-2009,$^{\epsilon 2}$ versus 16 CFR 1201.4's Impact Test Structure and Test Specimen Mounting Frame. ANSI Z97.1-2009$^{\epsilon 2}$ provides enlarged drawings of the Impact Test Frame. Overall, the Glass Impact Test Structure of 16 CFR 1201.4 appears to be of similar construction to the ANSI Z97.1-2009$^{\epsilon 2}$ Impact Test Frame, except that ANSI Z97.1-2009$^{\epsilon 2}$ provides clearer assembly drawings.

The ANSI drawings are larger and clearer to use, which would benefit manufacturers. In addition, if the ANSI impact test procedures were adopted, manufacturers who currently test to both the CPSC standard and ANSI standard could avoid duplicative testing because the manufacturers would not need to conduct impact tests for both the CPSC standard and the ANSI standard. The proposed amendment adopting the ANSI test procedures would not involve a material change to the standard because the ANSI impact tests are comparable to the CPSC impact tests, but clearer construction drawings are provided in the ANSI standard.

3. *The ANSI test procedures clarify specimen categories, methodology, and quantity*

The CPSC standard provides two impact categories, 150 foot-pound impact test (Category I) and 400 foot-pound impact test (Category II). 16 CFR 1201.4(d). The ANSI standard provides three impact categories (5.1.2.1): a 400 foot-pound impact test (Class A); a 150 foot-pound impact test (Class B); and a 100 foot-pound impact test (Class C) for fire-resistant wired glass. The proposed amendment would not result in a material change because

the impact categories in the CPSC standard would remain the same and still include the 150 foot-pound impact test and 400 foot-pound impact test. The 100 foot-pound test in the ANSI standard only applies to fire-resistant wired glass, a product that is exempt from the CPSC standard. The Commission is not proposing to change the scope of the materials covered by the CPSC standard. Thus, manufacturers would not be required to follow the ANSI standard 100 foot-pound impact test (Class C) for fire-resistant wired glass because these materials remain exempt under the proposed amendment.

Both 16 CFR 1201.4(e)(1) and ANSI Z97.1-2009$^{\epsilon 2}$ (5.1.4 (1)) permit using a 3-inch diameter steel sphere for evaluating any hole remaining in an impact tested specimen after the impact test for flat specimens. However, the standards differ because the CPSC standard requires that the specimen be evaluated in a horizontal position after the vertical test is completed. ANSI Z97.1-2009$^{\epsilon 2}$ requires that the impacted specimen remain in the vertical, upright as-impact tested position while being evaluated with the 3-inch diameter steel sphere. Adopting the ANSI test procedure does not constitute a material change in the test method because the basic purpose of the requirement is not altered; rather, the test procedure is clarified. Leaving the specimen in the vertical position makes it less likely that gravity or human error will contribute to the potential failure of a product.

In addition, the requirements for size classification of impact specimens at 16 CFR 1201.4(c)(2) does not specify the number of specimens to be impact tested; rather, the standard requires only that the largest size and each thickness offered by the manufacturer are to be tested. However, ANSI Z97.1-2009$^{\epsilon 2}$ (4.4) requires that four specimens of each size and thickness are to be impact tested. Specifying the number of specimens to be tested would not involve a material change to the standard because the proposed amendment would not alter the basic purpose of the

requirement; rather, the ANSI test method would clarify the number of specimens to be tested, which would help reduce confusion on the number of specimens to be tested and provide a clearer test for manufacturers.

4. *The ANSI test procedures clarify procedures for evaluating tempered glass specimens*

ANSI Z97.1-2009$^{\epsilon 2}$ (5.2) has more specific procedures for evaluating tempered glass specimens than 16 CFR 1201.4(d). The ANSI standard specifies a procedure to evaluate tempered glass specimens that did not fracture as a result of the 400 foot-pound Class A impact test. In the CPSC standard, fragmented pieces of glass were evaluated, by size and weight, only if the specimen failed the impact test. The ANSI standard requires that all samples that have been impacted be subjected to a "Center Punch Fragmentation Test," which requires purposely fracturing the unbroken impact-tested tempered glass specimen with a center punch and hammer. In both cases, the fractured pieces of the tempered glass specimen are evaluated by weighing the 10 largest fragments. A tempered glass specimen is considered to conform to both the CPSC standard and ANSI Z97.1-2009$^{\epsilon 2}$ as acceptable for use as safety glazing, if the 10 largest fragments weigh no more than the equivalent of 10 in^2 of the original unbroken specimen; however, ANSI Z97.1-2009$^{\epsilon 2}$ requires that the pieces selected be no longer than 4 inches in length. Adopting the ANSI test procedures for evaluating tempered glass would not alter the basic purpose of the CPSC standard; rather, the ANSI Center Punch Fragmentation Test provides a more accurate and efficient way of measuring potential failures, which would further clarify the impact test for tempered glass for manufacturers.

5. *Other Provisions*

There are other testing procedures in the CPSC standard and the ANSI standard that are similar. Both standards have a boil test for laminated glass and similar requirements for testing for failure (1201.4(c)(3)(i); ANSI Z97.1-2009$^{\epsilon 2}$ (5.3)). Both standards provide for accelerated environmental durability testing for organic coated glass (1201.4(d)(2)(B); ANSI Z97.1-2009$^{\epsilon 2}$ (5.4)); adhesion tests for organic coated glass (1201.4(e)(ii)(B)(1); ANSI Z97.1-2009$^{\epsilon 2}$ (5.4.2.2.1)); tensile strength tests for organic coated glass (1201.4(e)(ii)(B)(2); ANSI Z97.1-2009$^{\epsilon 2}$ (5.4.2.2.2)); and impact testing of organic coated glazing materials for indoor service (1201.4(c)(3)(iii); ANSI Z97.1-2009$^{\epsilon 2}$ (5.4.3)). The similarities in the testing procedures between the two standards further support the adoption of the proposed ANSI testing procedures. The proposed amendment would not result in a material change because the tests are comparable; however, manufacturers who currently test to both the CPSC standard and ANSI standard could reduce confusion regarding which standard to follow, and avoid duplicative testing, if the Commission specified the use of the ANSI test procedures.

III. *Injury Information*

CPSC Staff reviewed the Injury and Potential Injury Incident (IPII), In-Depth Investigation IDI), and Death Certificate databases for injuries reported to the Commission and identified 430 incidents for the period from 1978 to 2014. Since 1978, 98 architectural glazing-related fatalities were reported to the CPSC. Shower doors and enclosures accounted for 64 percent of the injuries and deaths. Glass or partial glass storm doors accounted for 15 percent of the reported injuries and deaths, and "sliding glass" doors or doors only specified as "glass doors" accounted for 8 percent each of the reported injuries and deaths. At least two of the incidents involved wired glass, which is exempt from the CPSC standard.

In addition to reviewing the CPSC databases, CSPC staff also identified 9,942 cases that occurred during the period from 1991 through 2013, which involved injuries from architectural glazing products treated in the emergency departments of CPSC's National Electronic Injury Surveillance System ("NEISS") member hospitals. Staff determined that due to design changes within NEISS, estimates made before 1991 are not comparable. Based on these cases, staff computed a national estimate of 420,000 emergency department-treated injuries, with a coefficient of variance of 0.0648 percent. The 95 percent confidence interval for this estimate is 366,000 to 473,000. Ninety-six percent of the cases during the 1992 to 2013 period, which were reviewed by staff, involved lacerations. During this 20-year time period, the estimated number of emergency department-treated architectural glazing breakage incidents has declined.

Injury severity ranged from minor lacerations, abrasions, and contusions, to more severe laceration, puncture, and penetration injuries. The body part most often involved in these incidents was the arm (46.8%), followed by hand (30.1%), and head (8.6%). The incidents captured in NEISS suggest that the most severe injuries (*i.e.*, injuries that necessitated transfer to another hospital or admission to the hospital where emergency room treatment was provided) represented approximately 5 percent of the total. Lacerations are the most common hazard associated with glazing failures, and can range from superficial to extreme in their severity. Severe injuries often require surgery and rehabilitation, which may result in the loss of motion, loss of sensation, or permanent disfigurement.

Although many incident reports lacked detailed information about the injury, a review of the incidents from the CPSC databases suggests that many of the injuries and deaths resulted from products that did not meet the CPSC standard; the deep laceration injuries and puncture and

penetration wounds reported in these incidents, some of which were fatal, most likely resulted from large glass fragments from broken pieces of non-safety glass.

IV. *Impact on consumer safety*

To assess the potential effect of the proposed amendment on consumer safety, in January 2014, CPSC staff collected information on sample data from 16 SGCC-approved testing laboratories to assess the relative compliance of architectural glazing companies with 16 CFR 1201.4 and the ANSI standard. The 16 laboratories represented approximately 70 percent of the third party testing laboratories responsible for testing architectural glazing products. Specifically, the companies were asked if specimens that pass 16 CFR 1201.4 were ever noncompliant with ANSI standard, and if so, the frequency of such occurrence. Ninety percent of all responses stated that there had never been an instance in which a specimen that complied with the ANSI standard did not also comply with the requirements of 16 CFR 1201.4.

These data indicate that replacing the CPSC standard testing procedures with the testing procedures in the ANSI standard would not have an important or significant impact on consumer safety because only a small number of samples tested (5 out of more than 3,500) failed the CPSC standard testing, but passed when tested to the voluntary standard. Accordingly, the data show that testing to either standard provides consistent testing results, and adopting the ANSI standard would not significantly affect the testing results.

V. *Burdens on Industry Generally*

As discussed in section II, replacing the test procedures in 16 CFR 1201.4 with the ANSI standard test procedures will make product testing more efficient and avoid potentially redundant tests for manufacturers who currently comply with the voluntary and the CPSC standard. Moreover, there is already substantial compliance with the ANSI standard.

CPSC staff's review showed that there are about 250 manufacturers of architectural glazing materials and roughly 2,500 glazing material products certified annually. SGCC manages the certification testing for about 70 percent of the market. The remaining manufacturers conduct in-house testing or they contract testing through labs outside of SGCC. All but a small proportion of these manufacturers currently test to both the CPSC mandatory standard and the ANSI voluntary standard.

Most manufacturers in the architectural glazing industry certify their products to ANSI Z97.1-2009€2 and 16 CFR part 1201. Of the products certified through SGCC, 99 percent or 1,855 products were certified to both ANSI Z97.1-2009€2 and 16 C.F.R. part 1201. Only 12 products (0.6%) were certified solely to ANSI Z97.1-2009€2; seven products (0.4%) were certified solely to 16 CFR part 1201. CPSC staff's review of manufacturers from the Glass Association of North America ("GANA"), which consists of members that both do and do not participate in the SGCC program, indicated that of the 35 manufacturers that test their products outside of SGCC and provided certification information, 32 manufacturers certified to both standards, and only three manufacturers listed certification to just 16 CFR part 1201.

Based on CPSC staff's review, if the ANSI standard test procedures were adopted, the proposed amendment would not have an important or significant impact on the burdens imposed on the regulated industry. Almost all of the manufacturers already certify to the ANSI standard. Manufacturers currently testing to both the ANSI standard and the CPSC standard will probably experience a decrease in testing and certification costs because they would only need to follow one testing protocol to be certified to both standards. This reduces the number of samples that a manufacturer needs to fabricate for testing, which will directly reduce certification costs. In addition, for manufacturers who contract out their

testing, shipping costs will be reduced, due to the smaller number of samples shipped. SGCC estimates that its customers each would save an average of $1,284 per product tested annually. Thus, the proposed amendment likely would lessen the impact on the burdens imposed on industry to meet the requirements of the CPSC standard.

VI. *Regulatory Flexibility Act Analysis*

The Regulatory Flexibility Act ("RFA") requires that proposed rules be reviewed for the potential economic impact on small entities, including small businesses. 5 U.S.C. 601-612. Section 603 of the RFA requires agencies to prepare and make available for public comment an Initial Regulatory Flexibility Analysis ("IRFA"), describing the impact of the proposed rule on small entities and identifying impact-reducing alternatives. The requirement to prepare an IRFA does not apply if the agency certifies that the rulemaking will not have a significant economic impact on a substantial number of small entities. *Id*. 605. Because the Commission expects that the economic effect on all entities will be minimal, the Commission certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities.

Small Entities to Which the Proposed Rule Would Apply

The U.S. Small Business Administration ("SBA") guidelines categorize manufacturers of flat glass as "small" if they have fewer than 1,000 employees; and they categorize manufacturers of products made with purchased glass as "small" if they have fewer than 500 employees. In cases where firms fall under both categories, the size standard for flat glass manufacturers is applied to classify the firm. Based upon these criteria, the number of small manufacturers and importers identified in the architectural glazing market is 104, including 10 firms of undetermined size. Of the 104 small manufacturers known to produce architectural glass, 84

certify their products through the SGCCand 20 certify their products through other in-house testing, or they contract the testing.

The expected impact of the proposed rule is to reduce the costs of certification for most manufacturers. The 102 of 104 small manufacturers currently testing to both the ANSI standard and the CPSC standard also will probably experience a decrease in testing and certification costs because they would only need to follow one testing protocol to be certified to both standards. This reduces the number of samples a manufacturer needs to fabricate for testing, thus directly reducing certification costs. In addition, for manufacturers who contract out their testing, shipping costs will be reduced, due to the smaller number of samples shipped.

SGCC estimates that its customers would each save an average of $1,284 per product tested annually. Two manufacturers outside SGCC's membership who currently test to both standards will also likely see cost savings. However, if these two manufacturers currently conduct their testing in-house, they do not incur the costs of shipping samples to SGCC; thus, the cost savings will be limited to the savings from fabricating fewer testing samples.

One of the two small domestic manufacturers that does not certify to both standards is listed under SGCC's certified products directory and tests products only to 16 CFR part 1201. SGCC's fees are structured so that testing to ANSI Z97.1-2009€2 and 16 CFR part 1201 currently cost the manufacturer the same. Thus, this manufacturer should not experience an increase in testing fees from aligning 16 CFR 1201.4's testing protocol with ANSI Z97.1-2009€2. However, there will probably be an increase in cost associated with the shipping and fabrication of the higher number of CPSC samples required to be tested under ANSI Z97.1-2009€2.

Of those small manufacturers identified outside of SGCC, only one was found to have products tested only to 16 CFR 1201.4, according to certification information readily available.

This small manufacturer contracts out to a lab for certification and the lab tests to both standards. Therefore, this small manufacturer should not incur any significant increase due to testing fees. However, this manufacturer could experience some increase in shipping and fabricating costs, as identified above.

In summary, 102 of 104 small architectural glazing producers (or about 98 percent of the small producers) would experience some slight cost savings, or no impact, due to the proposed amendment. Consequently, the Commission certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities under the criteria of the RFA.

VII. *Environmental Considerations*

Generally, the Commission's regulations are considered to have little or no potential for affecting the human environment, and environmental assessments and impact statements are not usually required. See 16 CFR 1021.5(a). The proposed rule is not expected to have an adverse impact on the environment and is considered to fall within the "categorical exclusion" for the purposes of the National Environmental Policy Act. 16 CFR 1021.5(c). However, the proposed rule will decrease the number of samples that most manufacturers are required to test, and will likely lead to a small, beneficial effect on the environment because waste produced by the manufacture of excess samples, and the transport of those samples, will be reduced.

VIII. *Paperwork Reduction Act*

Currently, there is no paperwork collection burden associated with 16 CFR part 1201, and the proposed amendment to the regulation does not create any new paperwork collection burdens. Thus, no paperwork burden is associated with the proposed rule, and the Paperwork

Reduction Act of 1995 (44 U.S.C. 3501–3520) does not apply.

IX. *Executive Order 12988 (Preemption)*

Section 26(a) of the CPSA, 15 U.S.C. 2075(a), provides that when a consumer product safety standard under this Act is in effect and applies to a risk of injury associated with a consumer product, no state or political subdivision of a state may either establish or continue in effect any provision of a safety standard or regulation which prescribes any requirements as to the performance, composition, contents, design, finish, construction, packaging, or labeling of such product, which are designed to deal with the same risk of injury associated with such consumer product, unless such requirements are identical to the requirements of the federal standard. Section 9(h) of the CPSA provides that the Commission may by rule amend any consumer product safety rule. Therefore, the preemption provision of section 26(a) of the CPSA would apply to any rule issued under section 9(h).

X. *Effective Date*

The APA generally requires that the effective date of a rule be at least 30 days after publication of a final rule. 5 U.S.C. 553(d). Accordingly, if a final rule is issued, the amendment will go into effect 30 days after publication of a final rule.

XI. *Incorporation by Reference*

The Commission proposes to incorporate by reference ANSI Z97.1-2009[e2]. The Office of the Federal Register ("OFR") has regulations concerning incorporation by reference. 1 CFR part 51. The OFR recently revised these regulations to require that, for a proposed rule, agencies must discuss in the preamble to the NPR, ways that the materials that the agency proposes to incorporate by reference are reasonably available to interested persons, or how the agency

worked to make the materials reasonably available. In addition, the preamble to the proposed rule must summarize the material. 1 CFR 51.5(a).

In accordance with the OFR's requirements, section II of this preamble summarizes the ANSI Z97.1-2009^{c2} standard that the Commission proposes to incorporate by reference into 16 CFR part 1201. Interested persons may purchase a copy of ANSI Z97.1-2009^{c2} from the following address. Attn: ANSI Customer Service Department, 25 W 43rd Street, 4th Floor, New York, NY, 10036. The standard is also available for purchase from ANSI's website: http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI+Z97.1-2009. A copy of the standard can also be inspected at CPSC's Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone 301-504-7923.

XII. *Request for Comments*

The Commission invites interested persons to submit their comments to the Commission on any aspect of the proposed amendment. Comments should be submitted as provided in the instructions in the ADDRESSES section at the beginning of this notice.

List of Subjects in 16 CFR Part 1201

Administrative practice and procedure, Consumer protection, Imports, Labeling, Law enforcement, Incorporation by reference.

For the reasons stated in the preamble, the Consumer Product Safety Commission proposes to amend 16 CFR part 1201 as follows:

PART 1201 – SAFETY STANDARD FOR ARCHITECTURAL GLAZING MATERIALS

1. The authority citation for part 1201 continues to read as follows:

Authority: Secs. 2, 3, 7, 9, 14, 19. Pub.L. 92-573, 86 Stat. 1212-17; (15 U.S.C. 2051, 2052, 2056, 2058, 2063, 2068)

2. Revise § 1201.4 to read as follows:

(a) Except as provided in §§ 1201.1(c) and (d), architectural glazing products shall be tested in accordance with all of the applicable test provisions of ANSI Z97.1-2009$^{\epsilon 2}$ "*American National Standard for Safety Glazing Materials Used in Building – Safety Performance Specifications and Methods of Test.*" The Director of the Federal Register approves the incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from ANSI Customer Service Department, 25 W 43rd Street, 4th Floor, New York, NY, 10036. You may inspect a copy at the Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone 301-504-7923, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal-register/cfr/ibr-locations.html.

(b) [Reserved]

3. Remove Figures 1 through 5 to Subpart A of Part 1201

Dated: _____

_____
Alberta E. Mills, Acting Secretary
Consumer Product Safety Commission.

Architectural Glazing
Staff Briefing Package

Petition CP12-3
Staff Proposed Amendment to 16 C.F.R. Part 1201: Safety Standard for Architectural Glazing Materials

April 6, 2015

For Additional Information, Contact

Brian M. Baker, Project Manager
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Executive Summary

On June 26, 2012, the U.S. Consumer Product Safety Commission ("CPSC" or "Commission") received a letter from William M. Hannay, counsel for the Safety Glazing Certification Council ("SGCC" or "petitioner"), requesting that the Commission initiate rulemaking to amend 16 C.F.R. part 1201,[1] *Safety Standard for Architectural Glazing Materials* ("the mandatory standard"). The petitioner asserted that the public and architectural glazing product manufacturers would be better served by replacing the older testing procedures found in section 1201.4 of the mandatory standard, with the more modern testing protocol in ANSI Z97.1-2009$^{\epsilon 2}$, *American National Standard for Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test* ("the ANSI standard"), as revised in 2011.

On August 30, 2012, the Commission published a *Federal Register* notice soliciting comments on the petition. CPSC received five comments, all supporting the changes the petitioner suggested. On April 3, 2013, staff submitted a briefing package to the Commission evaluating the technical and economic aspects of the petition, as well as the feasibility of integrating the test procedures of the ANSI standard into the mandatory standard.[2] Staff recommended that the Commission grant the petition. On April 9, 2013 the Commission voted to grant the petition.

In this briefing package, staff recommends that the Commission issue a notice of proposed rulemaking ("NPR") to amend 16 C.F.R. § 1201.4 and replace the test procedures currently set forth in that regulation with the test procedures in the ANSI standard. Staff does not recommend any changes to the scope and exemptions provided in § 1201.1 of the mandatory standard. Staff believes that the draft amendment to 16 C.F.R. § 1201.4 would not constitute a material change because the proposed amendment would not affect the basic purpose or provisions of the mandatory standard.

Based on staff's analysis and review of the mandatory standard and ANSI standard and review of the compliance data, staff concludes that the draft proposed amendment will not alter the original general purpose of the rule, nor have an important or significant impact on the safety of consumers or on the burdens imposed on the regulated industry. The draft proposed amendment would clarify the current test procedures and update the references to obsolete standards. The adoption of the ANSI test procedures would reduce duplicate testing by manufacturers, who currently test to both the ANSI standard and the mandatory standard. Reducing testing burdens and associated costs would benefit the regulated industry. Staff's review shows that there is already widespread compliance with the ANSI standard. About 102 of the 104 small manufacturers currently testing to both voluntary

[1] Petition CP 12-3, Tab A.

[2] http://www.cpsc.gov//Global/Newsroom/FOIA/CommissionBriefingPackages/2013/ArchitecturalGlazingPetitionBriefingPackage.pdf.

and mandatory standards are expected to experience a decrease in testing and certification costs because they would only need to follow one testing protocol instead of two. Therefore, there would not be any significant increase in burden to the regulated industry if the Commission adopted the ANSI test procedures.

Accordingly, staff recommends that the Commission publish the draft NPR which proposes to replace the test procedures in 16 C.F.R. § 1201.4, with the test procedures in ANSI Z97.1-2009$^{\epsilon 2}$. If a final rule is published in the *Federal Register,* the test procedures would become effective 30 days after publication of the final rule.

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

This document has been electronically approved and signed.

Memorandum

Date: May 6, 2015

TO : The Commission

Alberta Mills, Acting Secretary

THROUGH : Stephanie Tsacoumis, General Counsel

Patricia Adkins, Executive Director

Robert J. Howell, Deputy Executive Director for Safety Operations

FROM : George A. Borlase, Assistant Executive Director,
Office of Hazard Identification and Reduction

Brian M. Baker, Mechanical Engineer, Project Manager
Division of Mechanical Engineering, Directorate for Laboratory Sciences

SUBJECT : Proposed Amendment to 16 C.F.R. Part 1201.4, *Safety Standard for Architectural Glazing Materials; Testing Procedures.*

I. INTRODUCTION

Architectural glazing is a type of glass building material, typically strengthened through one of several processes, including, but not limited to, annealing, laminating, tempering, toughening, heat strengthening, and chemical strengthening. Glazing products are commonly used as a type of structural glass, thereby making the products suitable for use in storm doors, bathtub and shower doors, and sliding glass doors, among other uses.

Glazing products currently are regulated by the *Safety Standard for Architectural Glazing Materials*, 16 C.F.R. part 1201, which specifies certain testing requirements for products designed to help ensure that upon failure or fracture of the glass, the resulting fragments do not pose a threat to consumer safety. The safety standard for architectural glazing materials, 16 C.F.R. part 1201, was established in 1977. The standard prescribes the safety requirements for glazing materials used or intended for use in certain products. The scope of products covered under 16 C.F.R. § 1201.1(a) of the mandatory standard include:

- Storm doors or combination doors;
- Bathtub doors and enclosures;

- Shower doors and enclosures;
- Sliding glass doors (patio-type);

Under 16 C.F.R. §1201.1(c), the following materials are exempt:

> (1) Wired glass used in doors or other assemblies to retard the passage of fire where required by federal, state, local, or municipal fire ordinance;
> (2) Louvers of jalousie doors;
> (3) Openings of doors which a 3 inch diameter sphere is unable to pass;
> (4) Carved glass (as defined in § 1201.2(a)(36)), dalle glass (as defined in § 1201.2(a)(37)), or leaded glass (as defined in § 1201.2(a)(14)), which is used in doors and glazed panels (as defined in §§ 1201.2(a)(7) and (a)(10)) if the glazing material meets all of the following criteria:
>
> > (i) The coloring, texturing, or other design qualities or components of the glazing material cannot be removed without destroying the material; and
> > (ii) The primary purpose of such glazing is decorative or artistic; and
> > (iii) The glazing material is conspicuously colored or textured so as to be plainly visible and plainly identifiable as aesthetic or decorative rather than functional (other than for the purpose of admitting or controlling admission of light components or heat and cold); and
> > (iv) The glazing material, or assembly into which it is incorporated, is divided into segments by conspicuous and plainly visible lines.
>
> (5) Glazing materials used as curved glazed panels in revolving doors;
> (6) Commercial refrigerator cabinet glazed doors.

In addition, the Commission revoked portions of the standard that prescribed requirements for "glazed panels" (45 Fed. Reg. 57383, August 28, 1980); an accelerated environmental durability test for plastic glazing materials intended for outdoor exposure (45 Fed. Reg. 66002, October 6, 1980); and a modulus of elasticity test, a harness test, and an indoor aging test applicable to plastic glazing materials. (47 Fed. Reg. 27853, June 28, 1982). Tempered glass, wire glass, and annealed glass are also exempt from the accelerated environmental durability tests. 16 C.F.R. § 1201.4(2).

On June 26, 2012, the Commission received a petition from the SGCC, requesting that the Commission initiate rulemaking to replace the test methods in section 1201.4, *Safety Standard for Architectural Glazing Materials* (the mandatory standard), with the test methods stated in the voluntary standard, ANSI Z97.1-2009,ϵ2 *American National Standard for Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test* (the ANSI standard).

The Office of the General Counsel ("OGC") docketed the request as a petition under the Consumer Product Safety Act (docketed CP 12-3), and the Commission published a request for comments in the *Federal Register* on August 30, 2012.[3] On April 13, 2013, staff

[3] 77 FR 52625. See Tab A.

submitted a briefing package to the Commission recommending that the Commission grant the petition. On April 9, 2013 the Commission voted to grant the petition.

In this briefing package, staff recommends that the Commission publish the proposed amendment in an NPR to replace the test procedures in 16 C.F.R. § 1201.4, with the test procedures in ANSI Z97.1-2009ϵ2.

Staff does not recommend any changes to the scope and exemptions provided in section 1201.1 of the mandatory standard.

II. DISCUSSION

A. Incident Data

The memorandum at Tab B provides CPSC staff's review of incidents involving injuries related to architectural glazing.

Injuries and Deaths Reported to CPSC

Staff searched the Injury and Potential Injury Incident (IPII), In-Depth Investigation (IDI), and Death Certificate databases for injuries reported to the Commission. Staff identified 430 incidents for the period 1978 to 2014.[4] Since 1978, a total of 98 architectural glazing-related fatalities were reported to the CPSC. Shower doors and enclosures accounted for 64 percent of the injuries and deaths. Glass or partial glass storm doors accounted for 15 percent of the reported injuries and deaths, and "sliding glass" doors or doors specified only as "glass doors," accounted for 8 percent each of the reported injuries and deaths. At least two of the incidents involved wired glass, which is exempt from the mandatory standard.

[4] CPSC staff searched these databases: Injury and Potential Injury Incident, In-Depth Investigation, and Death Certificate databases.

Table 1: Reported Architectural Glazing Breakage Incidents by 5-Year Period, 1978–2014

Years	Injury[5]	Hospitalized	Death	Total	Percent
1978-1982	9	2	14	25	6%
1983-1987	14	4	20	38	9%
1988-1992	9	7	21	37	9%
1993-1997	40	7	8	55	13%
1998-2002	44	7	6	57	13%
2003-2007	28	2	19	49	11%
2008-2012	54	2	7	63	15%
2013-2014[6]	*99*	*4*	*3*	*106*	*25%*
Total	297	35	98	430	100%
Percent	69%	8%	23%	100%	

Table 1 presents the incident data summarized by injury severity within 5-year time periods. The rise in reported incidents over the 35-year period may be due to increased use of the product or greater knowledge about ways to report complaints. Due to the possibility of unreported incidences, these incidents are anecdotal providing a minima for a given time period in used to determine a trend in potential hazard patterns, and may not be representative of the number of incidents that occur nationally. As discussed in the following section, review of the data from CPSC's National Electronic Injury Surveillance System ("NEISS") indicates that during the 20-year time period from 1991 to 2013 the estimated number of emergency department-treated architectural glazing breakage incidents has declined linearly since 1991.

[5] The Injury category includes incidents where injuries that were either self-treated or the patient was treated and released by a medical practitioner at a hospital, emergency room, or physician's office.

[6] Two-year period.

Source: Injury and Potential Injury Incident, In-Depth Investigation, and Death Certificate databases, March 2015.
Reporting continues for these databases and the reported number of incidents may change in the future.

Emergency Department-Treated Injuries (NEISS Database)

In addition to reviewing the CPSC databases, staff also identified 9,942 cases during the period from 1991 through 2013 involving injuries from architectural glazing products treated in the emergency departments of CPSC's National Electronic Injury Surveillance System ("NEISS") member hospitals (Table 2). Staff determined that due to design changes within NEISS, estimates made before 1991 are not comparable. Based on these cases, staff computed a national estimate of 420,000 emergency department-treated injuries, with a coefficient of variance (C.V.) of 0.0648 percent. The 95 percent confidence interval for this estimate is 366,000 to 473,000. Ninety-six percent of the cases during the period from 1992 to 2013 that staff reviewed involved lacerations.

Injury severity ranged from minor lacerations, abrasions, and contusions to more severe laceration, puncture, and penetration injuries. The body part most often involved in these incidents was the arm (46.8%), followed by hand (30.1%), and head (8.6%). The incidents captured in NEISS suggest that the most severe injuries (*i.e.*, injuries that necessitated transfer to another hospital or admission to the hospital where emergency room treatment was provided) represented approximately 5 percent of the total, which is similar to the results of the IDI analysis presented in Table 1.

Lacerations are the most common hazard associated with glazing failures, and can range from superficial to extreme in their severity. Severe injuries often require surgery and rehabilitation, which may result in the loss of motion, loss of sensation, or permanent disfigurement.

Many of the incidences that reported minor injuries lacked detailed information about the injury, however CPSC databases suggests that many of the moderate to severe injuries and deaths resulted from products that did not meet the mandatory standard; the deep laceration injuries and puncture and penetration wounds reported in these incidents, some of which were fatal, resulted from large glass fragments from broken pieces of non-safety glass.

Staff reported, and as represented numerically in Table 2, that during this 20-year time period the estimated number of emergency department-treated architectural glazing breakage incidents has declined approximately linearly since 1991.

Table 2: NEISS Hospital Estimated Architectural Glazing Breakage Incidents, 1991–2013

Year	NEISS Cases	Estimated Total	Coefficient of Variation	Lower 95% Confidence Bound	Upper 95% Confidence Bound
1991	516	28,100	0.1243	21,600	34,700
1992	539	28,300	0.1321	21,300	35,300
1993	552	28,600	0.1355	21,400	35,800
1994	543	28,700	0.1593	20,300	37,100
1995	523	24,200	0.0922	18,800	33,000
1996	466	20,200	0.0938	15,600	27,600
1997	440	18,600	0.0971	15,100	22,200
1998	493	20,600	0.0790	17,400	23,700
1999	447	17,800	0.1044	14,200	21,400
2000	455	17,400	0.0937	14,200	20,600
2001	478	17,900	0.0848	14,900	20,800
2002	413	15,200	0.1116	11,900	18,600
2003	388	14,400	0.1010	11,600	17,300
2004	376	14,700	0.1070	11,600	17,800
2005	377	13,800	0.1002	11,100	16,500
2006	390	14,300	0.1147	11,100	17,500
2007	392	14,500	0.1117	11,300	17,700
2008	371	14,100	0.805	11,900	16,300
2009	378	13,200	0.1069	10,400	16,000
2010	386	13,600	0.1063	10,700	16,400
2011	377	14,000	0.1074	11,000	16,900
2012	341	12,900	0.0881	10,700	15,100
2013	301	11,400	0.1464	8,100	14,700
Total	9,942	420,000	0.0648	366,000	473,000

B. Material Change

If amending a consumer product safety rule "involves a material change" 15 U.S.C. § 2058(h), the amendment would require the Commission to make the findings necessary to issue a consumer product safety rule, including that the standard is "reasonably necessary to prevent or reduce an unreasonable risk of injury associated with such product," the expected benefits of the amended rule "bear a reasonable relationship to its costs," and the amended rule imposes "the least burdensome requirement which prevents or adequately reduces the risk of injury for which the rule is being promulgated." *Id.* §§ 2056(a); 2058(a)-(g). An amendment to a consumer product safety standard involves a "material change" when the amendment either alters the original general purpose of the rule, or has an important or significant impact on the safety of consumers or the burdens imposed on the regulated industry. If the amendment does not constitute "a material change," for purposes of section 9 of the CPSA, the Commission would not be required to make the findings that are otherwise required for the adoption or amendment of a consumer product safety rule.

The Commission determined in 1978 that there was no material change to the architectural glazing standard when certain definitions and test procedures are clarified or modified in the standard (42 Fed. Reg. 53798, Oct. 3, 1977; 43 Fed. Reg. 43704, Sept. 27, 1978). Similarly, in the current draft proposed rule, the Commission would clarify certain test procedures in the standard and reference updated test methods. Because the scope and exemptions in the mandatory standard will not be changed, staff does not contemplate that the draft proposed amendment would affect the basic purpose and provisions of the standard. Moreover, staff has concluded that the draft proposed amendment would not have an important or significant impact on the safety of consumers or the burdens imposed on the regulated industry.

1. The Adoption of the ANSI test procedures would not affect the basic purpose of the mandatory standard

i. Comparison of Mandatory and Voluntary Standard

CPSC staff included a detailed technical comparison of 16 C.F.R. § 1201.4 and ANSI Z97.1–2009$^{\epsilon 2}$ in the briefing package provided to the Commission on April 3, 2013. The draft proposed amendment will not change the current exemptions. The scope section of the mandatory standard at 16 C.F.R. § 1201.1 (c) and (d) exempts certain materials, including certain wired glass. In addition, the test procedures at 16 C.F.R. § 1201.4 (2) do not provide for accelerated environmental durability testing of plastic glazing materials because the Commission removed those tests from 16 C.F.R. part 1201 in the early 1980s (45 Fed. Reg. 66002, October 6, 1980). In addition, tempered glass, wired glass, and annealed glass are not required to be subjected to the accelerated environmental durability tests, 16 C.F.R. § 1201.4 (a) (2). ANSI Z97.1-2009$^{\epsilon 2}$ includes testing for organic–coated glass, tempered glass, laminated glazing, plastic glazing, and fire-resistant wired-glass. The ANSI standard also does not exempt any specific glazing materials in contrast to 16 C.F.R. § 1201.1. Accordingly, the ANSI standard includes tests for certain items that are otherwise exempt

from the mandatory standard. Staff does not recommend that the Commission propose to alter the scope of the mandatory standard; thus, products that are exempt from 16 C.F.R part 1201 would continue to be exempt, and those exempt materials would not be subject to the ANSI test procedures.

Staff recommends, however, that the Commission propose to amend the mandatory standard by adopting the remaining test procedures in the ANSI standard.

ii. ANSI Test Procedures

1. Obsolete references would be replaced with updated test methods

Currently, 16 C.F.R. § 1201.4(b)(3)(ii) refers to obsolete ASTM standard practices and equipment, which have been replaced in the ANSI standard (§§ 5.4.1.1, 5.4.1.2). For example, the simulated weathering test in the mandatory standard references two outdated ASTM standards:

- ASTM G26-70 - *Practice for Operating Light Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials*, was withdrawn by ASTM in 2000, and replaced with ASTM G155 - *Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*.
- The obsolete 1970 edition of ASTM D2565-70 - *Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications,* has been revised over the years; its current edition is ASTM D2565-99(2008).

For manufacturers who test to both the 16 C.F.R. § 1201.4 and the ANSI standard, using these withdrawn and obsolete versions of current standards can result in increased costs and duplication of testing if manufacturers are required to test to the earlier versions of these editions to meet the regulation and also test to the current versions of these standard practice test procedures to meet the voluntary standard. Furthermore, the old standards referenced in 16 C.F.R. § 1201.4 (b)(3)(ii) require obsolete test equipment that currently is not manufactured. By replacing the mandatory testing procedures with the updated references in the ANSI standard, the proposed amendment would allow the use of currently manufactured test equipment, rather than the obsolete and outdated equipment referenced in section 1201.4(b)(3)(ii). The updated references would not involve a material change to the standard because these changes would not alter the basic purpose or provisions of the mandatory standard.

2. The ANSI impact tests are similar to the impact tests in section 1201.4(b)

Although ANSI Z97.1-2009$^{\epsilon 2}$ has been modified several times since the mandatory standard was published, the impact tests of 16 C.F.R. § 1201.4(b) and ANSI Z97.1-2009$^{\epsilon 2}$ (§5) are similar. The mandatory standard shows drawings of a Glass Impact Test Structure (Figures 1-5) that is similar to the drawing of the Impact Test Frame drawing in ANSI Z97.1-2009$^{\epsilon 2}$ (Figures 1-7), except for differences in the descriptive terms used for naming the parts of the test apparatus, *i.e.*, Main Frame and Sub-Frame in ANSI Z97.1-2009,$^{\epsilon 2}$versus 16 C.F.R. § 1201.4's Impact Test Structure and Test Specimen Mounting Frame. ANSI Z97.1-2009$^{\epsilon 2}$ provides enlarged drawings of the Impact Test Frame. Overall, the Glass Impact Test Structure of 16 C.F.R. § 1201.4 appears to be of similar construction to the ANSI Z97.1-2009$^{\epsilon 2}$ Impact Test Frame, except that ANSI Z97.1-2009$^{\epsilon 2}$ provides clearer assembly drawings. Adopting the ANSI Impact Test Frame procedures would not involve a material change to the standard because the proposed amendment would not alter the basic purpose of the requirement or result in a dissimilar test. The ANSI drawings are larger and clearer. If the ANSI impact test procedures were used, manufacturers who currently test to both the mandatory standard and ANSI standard could avoid duplicative testing because the proposed amendment would make clear which test methodology to use.

3. The ANSI test procedures clarify specimen categories, methodology, and quantity

The mandatory standard provides two impact categories: 150 foot-pound impact test (Category I) and 400 foot-pound impact test (Category II). 16 C.F.R. § 1201.4(d). The ANSI standard provides three impact categories (§5.1.2.1): a 400 foot-pound impact test (Class A); a 150 foot-pound impact test (Class B); and a 100 foot-pound impact test (Class C) for fire-resistant wired glass. The proposed amendment would not result in a material change because the impact categories in the mandatory standard would remain the same and still include the 150 foot-pound impact test and 400 foot-pound impact test. However, the 100 foot-pound impact test would not apply in the mandatory standard. Section 1201.1(c)(1) provides that "wired glass is used in doors or other assemblies to retard the passage of fire, where such door or assembly is required by a federal, state, local, or municipal fire ordinance" is exempt from the standard. Staff does not recommend changing the scope of the materials covered by the mandatory standard. Thus, manufacturers would not be required to follow the ANSI standard 100 foot-pound impact test (Class C) for fire-resistant wired glass because these materials would remain exempt under the proposed amendment.

Both 16 C.F.R. § 1201.4(e)(1) and ANSI Z97.1-2009$^{\epsilon 2}$ §5.1.4 (1) permit using a 3-inch diameter steel sphere for evaluating any hole remaining in an impact tested specimen after the impact test for flat specimens. However, the standards differ because the mandatory standard requires that the specimen be evaluated in a horizontal position after the vertical test is completed. ANSI Z97.1-2009$^{\epsilon 2}$ requires that the impacted specimen remain in the vertical, upright as-impact tested position while being evaluated with the 3-inch diameter steel sphere. Adopting the ANSI test procedure does not constitute a material change in the

test method because the basic purpose of the requirement is not altered; rather, the test procedure is clarified. By leaving the specimen in the vertical position, it is less likely that gravity or human error will aid in the potential failure of a product.

In addition, the requirements for size classification of impact specimens at 16 CFR 1201.4(c)(2) does not indicate the number of specimens to be impact tested; rather the standard requires only that the largest size and each thickness offered by the manufacturer are to be tested. On the other hand, ANSI Z97.1-2009$^{\epsilon 2}$ (§4.4) requires that four specimens of each size and thickness are to be impact tested. Specifying the number of specimens to be tested would not involve a material change to the standard because the proposed amendment would not alter the basic purpose of the requirement; rather, the ANSI test method would clarify the number of specimens to be tested, which would help reduce confusion about the number of specimens to be tested and would provide a clearer test for manufacturers.

4. The ANSI test procedures clarify procedures for evaluating tempered glass specimens

ANSI Z97.1-2009$^{\epsilon 2}$ (§5.2) has more specific procedures for evaluating tempered glass specimens than 16 C.F.R. § 1201.4(d). The ANSI standard specifies a procedure to evaluate tempered glass specimens that did not fracture as a result of the 400 foot-pound Class A impact test. In the mandatory standard, fragmented pieces of glass are evaluated by size and weight, only if the specimen fails the impact test. The ANSI standard requires that all samples that have been impacted be subjected to a "Center Punch Fragmentation Test," which requires purposely fracturing the unbroken impact-tested tempered glass specimen with a center punch and hammer. In both cases, the fractured pieces of the tempered glass specimen are evaluated by weighing the 10 largest fragments. A tempered glass specimen is considered to conform to both the mandatory standard and ANSI Z97.1-2009$^{\epsilon 2}$ as acceptable for use as safety glazing, if the 10 largest fragments weigh no more than the equivalent of 10 in^2 of the original unbroken specimen; however ANSI Z97.1-2009$^{\epsilon 2}$ requires that the pieces selected be no longer than 4 inches in length. Staff finds that this is a more accurate and efficient way of measuring potential failures and would not constitute a material change to the standard because the basic purpose of the requirement is not altered; rather, the ANSI test procedure clarifies and refines the existing impact test for tempered glass.

5. Other Provisions

There are other testing procedures in the mandatory standard and the ANSI standard that are similar. Both standards have a boil test for laminated glass and similar requirements for testing for failure (§ 1201.4(c)(3)(i); ANSI Z97.1-2009$^{\epsilon 2}$ § 5.3). Both standards provide for accelerated environmental durability testing for organic coated glass (§ 1201.4(d)(2)(B); ANSI Z97.1-2009$^{\epsilon 2}$ (§ 5.4)); adhesion tests for organic coated glass (§ 1201.4(e)(ii)(B)(1); ANSI Z97.1-2009$^{\epsilon 2}$ (§ 5.4.2.2.1)); tensile strength tests for organic-coated glass (§ 1201.4(e)(ii)(B)(2); ANSI Z97.1-2009$^{\epsilon 2}$ § 5.4.2.2.2)); and impact testing of

weathered organic coated glazing materials for indoor service (§ 1201.4(c)(3)(iii); ANSI Z97.1-2009ϵ2 (§ 5.4.3)). The similarities in the testing procedures between the two standards support the staff's view that adopting the ANSI testing procedures would not involve a material change to the standard because the changes would not alter the basic purpose or provisions of the mandatory standard.

2. The proposed amendment would not have a significant impact on consumer safety

To assess the potential effect of amendment on consumer safety, in January 2014, staff collected additional information on sample data from 16 SGCC-approved testing laboratories to assess the relative compliance of architectural glazing companies with 16 C.F.R. part 1201 and the ANSI standard. The 16 laboratories represented approximately 70 percent of the third party testing laboratories responsible for testing architectural glazing products. Specifically, the companies were asked if specimens that pass 16 C.F.R. § 1201.4 were ever noncompliant with ANSI Z-97.1, and if so, the frequency of such occurrence.[7] Of the 16 laboratories polled, ninety percent of all responses stated that there had not been an instance in which a specimen complied with ANSI Z97.1 that did not also comply with the requirements of 16 C.F.R. § 1201.4. These data support staff's conclusion that replacing the mandatory standard testing procedures with the testing procedures in the current voluntary standard would not have a meaningful impact on consumer safety because only small number of samples tested (5 out of more than 3,500) failed the mandatory standard testing but passed when tested to the voluntary standard. Accordingly, staff concludes that the draft proposed amendment would not have an important or significant impact on the safety of consumers.

3. The proposed amendment would not have a significant impact on the burdens imposed on the regulated industry.

Adopting the ANSI standard test procedures will make product testing more efficient, less costly and avoid potentially redundant tests for manufacturers who currently comply with the voluntary, as well as the mandatory standard. Moreover, there is already substantial compliance with the ANSI standard. Staff's review showed that there are about 250 manufacturers of architectural glazing materials and roughly 2,500 glazing material products certified annually. The SGCC manages the certification testing for about 70 percent of the market.. The remaining manufacturers conduct in-house testing or contract testing through labs outside of SGCC. All but a small proportion of these manufacturers currently test to both the mandatory and voluntary standards. Staff has found that it is typical for manufacturers in the architectural glazing industry to certify their products to ANSI Z97.1-2009ϵ2 and 16 C.F.R. part 1201. Of the products certified through SGCC, 99 percent or 1,855 products were certified to both ANSI Z97.1-2009ϵ2 and 16 C.F.R. part 1201. Only 12 products (0.6%) were certified solely to ANSI Z97.1-2009ϵ2, and 7 products

[7] No information was requested on the manufacturer of the samples. Laboratories were assured anonymity in order to preserve the integrity of the data collected.

(0.4%) were certified solely to 16 C.F.R. part 1201. Staff's review of manufacturers from the Glass Association of North America ("GANA") which consists of members that both do and do not participate in the SGCC program indicated that of the 35 manufacturers that test their products outside of SGCC and provided certification information, 32 manufactures certified to both standards and only three manufacturers listed certification to just 16 C.F.R. part 1201.

Accordingly, staff concludes that the draft proposed amendment would not have an important or significant impact on the burdens imposed on the regulated industry because most of the manufacturers already certify their materials to the ANSI standard.

C. Draft Proposed Amendment

The ANSI standard provides current test requirements and references to modern methodologies, for the materials covered by the CPSC mandatory standard. The ANSI standard clearly specifies key testing criteria across multiple test platforms, such as the number of test specimens. Thus, amending the mandatory standard to replace its testing procedures with those in the voluntary standard will result in a more efficient process because manufacturers would no longer be testing to both standards. Staff believes that the draft proposed amendment adopting the ANSI testing methods would not create a material change to the standard because the adoption of the ANSI testing methods would not change the basic purpose or provisions of the standard. Moreover, staff does not recommend changing the scope or exemptions currently in 16 C.F.R. § 1201.1.

Staff recommends replacing the test methods found in 16 C.F.R. § 1201.4, with the test methods in the voluntary standard, ANSI Z97.1-2009$^{\epsilon 2}$. The draft proposed amendment would remove 16 C.F.R. § 1201.4 and accompanying Figures 1 through 5, and insert the following language in its place:

> **§ 1201.4**
>
> Except as provided in section 1201.1(c) and (d), architectural glazing products shall be tested in accordance with all the applicable test provisions of ANSI Z97.1 (most current version), "American National Standard for Safety Glazing Materials Used in Building – Safety Performance Specifications and Methods of Test."

D. Market Information and Economic Considerations

There are about 250 manufacturers of architectural glazing materials and roughly 2,500 glazing material products certified annually. According to SGCC, SGCC manages the certification testing for about 70 percent of the market. The remaining manufacturers conduct in-house testing or they contract testing through labs outside of SGCC. All but a small proportion of these manufacturers currently test to both the mandatory and voluntary standards. The draft proposed mandatory standard amendment would reduce the burden on manufacturers testing to both standards by harmonizing the testing requirements.

SBA guidelines categorize manufacturers of flat glass as small if they have fewer than 1,000 employees; manufacturers of products made with purchased glass are categorized as small if they have fewer than 500 employees. Based on these criteria, staff identified 104 small manufacturers of architectural glazing materials. The size of 10 additional firms could not be determined.

About 102 of the 104 small manufacturers currently testing to both voluntary and mandatory standards are expected to experience a decrease in testing and certification costs because they would only need to follow one testing protocol instead of two. According to SGCC, their customers would each save about $1,284 per product tested if they did not have to test separately to both the voluntary and mandatory standards. (Manufacturers outside of SGCC's membership, who currently test to both standards, will also likely see some cost savings.) The two remaining small manufacturers that do not test to both standards could experience a small increase in testing fees, but this increase (if any) is not likely to be significant.

III. COMMISSION OPTIONS

The following options are available for Commission consideration:

1. Publish a notice of proposed rulemaking proposing an amendment to replace the test procedures provided in 16 C.F.R. § 1201.4 with the test procedures in ANSI Z97.1-2009ϵ2.

2. Do not publish a notice of proposed rulemaking proposing an amendment to replace the test procedures provided in 16 C.F.R. § 1201.4 with the test procedures in ANSI Z97.1-2009ϵ2.

3. Other options, as directed by the Commission.

IV. STAFF RECOMMENDATION

Accordingly, staff recommends that the Commission publish the draft proposed amendment that would replace the test procedures in 16 C.F.R. § 1201.4, with the test procedures in ANSI Z97.1-2009ϵ2.

Staff does not recommend any changes to the scope and exemptions provided in 16 C.F.R. part 1201.

V. ATTACHMENTS

TAB A – Federal Register Notice: Request for Comments

Proposed Rules

Federal Register
Vol. 77, No. 169
Thursday, August 30, 2012

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1201

Petition Requesting Rulemaking To Revise Test Procedures for Glazing Materials in Architectural Products

AGENCY: Consumer Product Safety Commission.

ACTION: Comment request.

SUMMARY: The U.S. Consumer Product Safety Commission ("Commission" or "we") has received a petition (CP12–3) requesting that the Commission initiate rulemaking to replace the testing procedures for glazing materials in certain architectural products set forth in our regulations, with those testing procedures contained in ANSI Z97.1, "American National Standard for Safety Glazing Materials Used in Building—Safety Performance Specifications and Methods of Test." We invite written comments concerning the petition.

DATES: The Office of the Secretary must receive comments on the petition by October 29, 2012.

ADDRESSES: You may submit comments, identified by Docket No. CPSC–2012–0049, by any of the following methods:

Electronic Submissions

Submit electronic comments in the following way:

Federal eRulemaking Portal: http://www.regulations.gov. Follow the instructions for submitting comments.

To ensure timely processing of comments, the Commission is no longer accepting comments submitted by electronic mail (email), except through *www.regulations.gov.*

Written Submissions

Submit written submissions in the following way:

Mail/Hand delivery/Courier (for paper, disk, or CD–ROM submissions), preferably in five copies, to: Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East-West Highway, Bethesda, MD 20814; telephone (301) 504–7923.

Instructions: All submissions received must include the agency name and petition number for this rulemaking. All comments received may be posted without change, including any personal identifiers, contact information, or other personal information provided, to: *http://www.regulations.gov.* Do not submit confidential business information, trade secret information, or other sensitive or protected information electronically. Such information should be submitted in writing.

Docket: For access to the docket to read background documents or comments received, go to: *http://www.regulations.gov.* A copy of the petition is available at *http://www.regulations.gov,* under Docket No. CPSC–2012–0049, Supporting and Related Materials.

FOR FURTHER INFORMATION CONTACT: Rochelle Hammond, Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East-West Highway, Bethesda, MD 20814; telephone (301) 504–6833.

SUPPLEMENTARY INFORMATION: The Commission has received a submission from William M. Hannay, Attorney at Law, Counsel for Safety Glazing Certification Council ("petitioner"), dated June 26, 2012, requesting that the Commission initiate a rulemaking to replace the current testing procedures for glazing materials codified at 16 CFR 1201.4, with those contained in ANSI Z97.1, "American National Standard for Safety Glazing Materials Used in Building—Safety Performance Specifications and Methods of Test." The Commission is docketing this request as a petition under the Consumer Product Safety Act (CPSA). 15 U.S.C. 2056 and 2058. The current standard for architectural glazing materials applies to glazing materials used or intended to be used in the architectural products subject to the standard, i.e., storm doors or combination doors, doors, bathtub doors and enclosures, shower doors and enclosures and sliding glass doors. The testing procedures set forth in Section 1201.4 require impact tests and accelerated environment durability tests which are intended to determine if glazing materials used in these architectural products meet safety requirements designed to reduce or eliminate unreasonable risks of death or serious injury to consumers when glazing material is broken by human contact. The testing procedures further describe the testing equipment and apparatus required to be used, and the test result interpretation methodology to be employed in determining if the glazing materials being tested meet the safety requirements of the standard.

Petitioner asserts that consumers and the glazing industry would be better served by replacing the test procedures for glazing materials used in the above-referenced architectural products in 16 CFR 1201.4 with ANSI Z97.1's purportedly more efficient and more modern procedures. Petitioner notes that the testing procedures set forth in Section 1201.4 were promulgated in 1977 and have not been updated or clarified since their original adoption by the Commission. Petitioner points out that the ANSI standard for glazing materials has been updated periodically (in 1984, 1994, 2004 and 2009) since the mandatory standard was promulgated, and that these updates include modifications in testing equipment and procedures that provide better protection for consumers.

Petitioner asserts that the absence of updates to the mandatory standard during a period in which the ANSI standard was revised four times has resulted in different testing methods and qualifying procedures that has created confusion in the industry regarding which test methodology must be used in what circumstance. Petitioner claims that the existence of overlapping but divergent mandatory and voluntary standards has created confusion for manufacturers in determining which standard applies, and resulted in manufacturers being required to pay for dual qualification testing, because different specifying agencies reference one or both standards. Petitioner also includes the proposed language that would replace the current Section 1201.4, directing manufacturers and private labelers of glazing material to test and certify the compliance of their products to the current ANSI standard.

By this notice, we seek comments concerning this petition. Interested parties may obtain a copy of the petition by writing or calling the Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330

TAB B – Epidemiology Memorandum

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

Date: March 24, 2015

TO : Brian M. Baker, Mechanical Engineer,
Division of Mechanical Engineering, Directorate for Laboratory Sciences

THROUGH : Kathleen Stralka, Associate Executive Director,
Epidemiology Directorate

Stephen Hanway, Division Director
Hazard Analysis Division

FROM : Matthew V. Hnatov, Mathematical Statistician
Hazard Analysis Division

SUBJECT : Injuries and Deaths Associated with Architectural Glazing, 1978 through 2014

Glazing products currently are regulated by the Safety Standard for Architectural Glazing Materials, 16 C.F.R. part 1201, which specifies certain testing requirements for products designed to help ensure that upon failure or fracture of the glass, the resulting fragments do not pose a threat to consumer safety. The mandatory standard prescribes the safety requirements for glazing materials used or intended for use in the following consumer products:

- Glass or partial glass storm doors;
- Sliding glass doors (*e.g*., patio doors);
- Shower/bath tub doors and enclosures;
- Doors with windows or panes (*e.g*., front entry doors); and
- Doors only specified as "glass doors" in the reports.

U.S. Consumer Product Safety Commission ("CPSC") staff searched CPSC databases for incidents related to architectural glazing, in particular, incidents involving glass breakage resulting in death, amputation, laceration, or hemorrhaging. Staff found 430 architectural glazing incidents in which an injury was reported to the CPSC from 1978 through 2014. Ninety-eight of these incidents resulted in death.[8]

[8] CPSC staff is aware of one additional fatality which was found in the NEISS and will be discussed later.

Additionally, based on estimates from the National Electronic Injury Surveillance System ("NEISS"), staff estimates that there were approximately 420,000 emergency department- ("ED") treated architectural glass incidents during the 23-year period from 1991 through 2013.

Notably, for many cases there was insufficient information to determine definitively the type of architectural glazing product associated with the injury. A portion of these cases is simply identified as "glass doors." Additionally, there were many cases in which "breakage" was not indicated explicitly, but breakage was implied by the description (*e.g.*, "put hand through glass door, multiple lacerations"; or "fell though shower door, cut upper torso"). Given the available information, CPSC staff characterized each of the cases to make a determination of the product type and whether glass breakage occurred. This was particularly true for NEISS reports because often there is very little descriptive information provided.

Reported Incidents

Staff searched three CPSC databases: Injury and Potential Injury Incident ("IPII"), In-Depth Investigation ("IDI"), and Death Certificate ("DTHS") databases to identify reports to the CPSC involving architectural glazing involving glass breakage resulting in death, amputation, laceration, or hemorrhaging. Analysis for multiple reports of the same incident found 430 unique incidents reporting injuries among those reports. Table 1 shows the incident counts by architectural glazing type and injury status. A small number of incidents involved multiple victims — most often involving two children bathing or being bathed when a shower/bath tub door or enclosure breakage occurred. Two of the incidents included above are known to have involved wired glass. Shower doors/enclosures accounted for more than half of the reported incidents involving injury from breakage of architectural glass and more than half of the reported hospitalizations.

Table 1: Reported Architectural Glazing Breakage Injury Incidents by Product Type and Injury Status, 1978–2014

Product	Injury*	Hospitalized	Death	Total	Percent
Glass or partial glass storm doors	34	8	24	66	15%
Sliding glass doors	11	6	19	36	8%
Shower/bath tub doors and enclosures	235	18	24	277	64%
Doors with windows or panes, including French doors	6	2	9	17	4%
Doors specified only as "glass doors"	12	0	22	34	8%
Total	298	34	98	430	100%
Percent	69%	8%	23%	100%	

** The Injury category includes incidents in which injuries were either self-treated or the patient was treated and released by a medical practitioner at a hospital, emergency room, or physician's office.*
Source: Injury and Potential Injury Incident, In-Depth Investigation, and Death Certificate databases, March 2015

Reporting continues for these databases, and the reported number of incidents may change in the future.

Table 2 presents the nonfatal incident data categorized by the architectural glazing product and the type of injury. Notably, the degree of injury may not always be reflected in the records. For example, injuries listed as "lacerations" actually may have required stitches to repair although this information is not indicated in the record. Similarly, "stitches" or "eye injuries" may have required hospitalizations.

Table 2: Reported Architectural Glazing Breakage Injury Incidents by Product and Nonfatal Injury Type*, 1978–2014

Product	Laceration /Punctures	Stitches	Eye Injury	Hospitalization	Injury, not specified	Total	Percent
Glass or partial glass storm doors	22	12	0	8	0	42	13%
Sliding glass doors	6	4	0	6	1	17	5%
Shower/bath tub doors and enclosures	192	21	2	19	19	253	76%
Doors with windows or panes, including French doors	4	2	0	2	0	8	2%
Doors specified only as "glass doors"	9	3	0	0	0	12	4%
Total	233	42	2	35	20	332	100%
Percent	70%	13%	1%	11%	6%	100 %	

** The Injury category includes incidents in which injuries were either self-treated or the patient was treated and released by a medical practitioner at a hospital, emergency room, or physician's office.*
Source: Injury and Potential Injury Incident, In-Depth Investigation, and Death Certificate databases, March 2015

Reporting continues for these databases, and the reported number of incidents may change in the future.

Table 3 presents the incident data summarized by injury severity within 5-year time periods. Reporting for any given year may not be inclusive of all incidents that occurred. Generalizations should not be made about trends over time in these data because these incidents are anecdotal and may not be representative of the number of incidents that occur nationally. Rather the counts merely provide minimums for any given time period. Also included in the table is a summary of the two most recent years—2013 and 2014.

Table 3: Reported Architectural Glazing Breakage Injury Incidents by 5-Year Period, 1978—2014

Years	Injury*	Hospitalized	Death	Total	Percent
1978-1982	9	2	14	25	6%
1983-1987	14	4	20	38	9%
1988-1992	9	7	21	37	9%
1993-1997	40	7	8	55	13%
1998-2002	44	7	6	57	13%
2003-2007	28	2	19	49	11%
2008-2012	54	2	7	63	15%
2013-2014+	*99*	*4*	*3*	*106*	*25%*
Total	297	35	98	430	100%
Percent	69%	8%	23%	100%	

** The Injury category includes incidents in which injuries were either self-treated or the patient was treated and released by a medical practitioner at a hospital, emergency room, or physician's office.*

+ Two-year period.

Source: Injury and Potential Injury Incident, In-Depth Investigation, and Death Certificate databases, March 2015

Reporting continues for these databases and the reported number of incidents may change in the future.

Emergency Department-Treated Injuries

Staff found 14,308 cases of architectural glass breakage-related incidents in NEISS from 1980 through 2013. In 1990, CPSC updated the NEISS sample to accommodate changes in the universe of U.S. hospitals with emergency departments. And, in 1991, CPSC increased the size of the NEISS sample of hospitals from 65 to 91 and retained the sample design. The increase in hospitals provided approximately 40 percent more injury cases per year[9]. This increase in cases provided for a modest boost in measures of statistical confidence. Due to this change, national annual estimates prior to 1991 are not directly comparable to annual estimates calculated from 1991 through 2013. During this period, staff found 9,942 such cases. Based on these cases, staff computed a national estimate of 420,000 emergency

[9] See the CPSC website for a description of the NEISS database at: http://www.cpsc.gov/en/Safety-Education/Safety-Guides/General-Information/National-Electronic-Injury-Surveillance-System-NEISS/.

department-treated injuries, with a coefficient of variation (C.V.) of 6.48 percent. The 95 percent confidence interval for this estimate is 366,000 to 473,000.

Yearly estimates of ED treated cases for the years 1991 through 2013 are presented in Table 4. As can be seen in the table, the estimated number of ED-treated injuries associated with architectural glazing breakage has dropped from an estimated annual average of over 28,000 ED visits in the early 1990s to an estimated annual average below 14,000 from 2009 through 2013.

Table 4: Estimated ED Visits Associated with Architectural Glazing Breakage 1991*-2013

Year	NEISS Cases	Estimated Total	Coefficient of Variation	Lower 95% Confidence Bound	Upper 95% Confidence Bound
1991	516	28,100	0.1243	21,600	34,700
1992	539	28,300	0.1321	21,300	35,300
1993	552	28,600	0.1355	21,400	35,800
1994	543	28,700	0.1593	20,300	37,100
1995	523	24,200	0.0922	18,800	33,000
1996	466	20,200	0.0938	15,600	27,600
1997	440	18,600	0.0971	15,100	22,200
1998	493	20,600	0.0790	17,400	23,700
1999	447	17,800	0.1044	14,200	21,400
2000	455	17,400	0.0937	14,200	20,600
2001	478	17,900	0.0848	14,900	20,800
2002	413	15,200	0.1116	11,900	18,600
2003	388	14,400	0.1010	11,600	17,300
2004	376	14,700	0.1070	11,600	17,800
2005	377	13,800	0.1002	11,100	16,500
2006	390	14,300	0.1147	11,100	17,500
2007	392	14,500	0.1117	11,300	17,700
2008	371	14,100	0.805	11,900	16,300
2009	378	13,200	0.1069	10,400	16,000
2010	386	13,600	0.1063	10,700	16,400
2011	377	14,000	0.1074	11,000	16,900
2012	341	12,900	0.0881	10,700	15,100
2013	301	11,400	0.1464	8,100	14,700
Total	9,942	420,000	0.0648	366,000	473,000

**NEISS estimates made prior to 1991 for architectural glass are not comparable to those made afterward due to design changes in NEISS. Source: National Electronic Injury Surveillance System databases, March 2015*

Table 5 presents a summary of the architectural glazing breakage-related cases in the NEISS, categorized by type of glazed material and treatment received, as specified in the NEISS record. This table, and the subsequent tables in this report, present actual case summaries and are not national estimates. The following tables represent un-weighted counts of actual cases reported in the NEISS system. As can be seen in Table 5, the majority of incidents (approximately 95%) were coded as Treated/examined and released. Nearly two-thirds (66.3%) of the treated injuries were related to breakage of doors specified only as "glass doors."

Table 5: NEISS Cases (Un-weighted) of Architectural Glazing Breakage By Product Type and Disposition, 1980*–2013

Disposition	Storm Doors	Sliding /Patio Doors	Shower Doors/Enclosures	Doors with windows or panes	Doors only specified as "glass doors"	Grand Total	Percent
Treat and released, or examined and released without treatment	1,885	604	580	1,500	8,998	13,567	94.8%
Treat and transferred to another hospital	23	19	9	12	141	204	1.4%
Treated and admitted for hospitalization (within same facility)	49	44	41	44	303	481	3.4%
Held for observation	2	1	0	1	11	15	0.1%
Left without being seen/Left against medical advice	2	0	1	4	24	31	0.2%
Fatality, including DOA, died in the ED	0	0	0	1	0	1	< 0.1%
Not recorded	0	1	1	1	6	9	0.1%
Grand Total	1,961	669	632	1,563	9,483	14,308	100%
Percent	13.7%	4.7%	4.4%	10.9%	66.3%	100%	

**NEISS cases are not available for electronic retrieval for 1978 and 1979.*
Source: National Electronic Injury Surveillance System databases, March 2015

Table 6 presents a summary of the architectural glazing breakage-related incidents in the NEISS data records, categorized by year of incident and treatment received, as specified in the NEISS record. Because of the small sample sizes in the individual categories, the data are presented in 4-year group summaries, with an additional 2-year period (2012-2013) representing the most currently available data. Please note that due to sample frame changes over the years, the totals presented are not directly comparable between year ranges. The table illustrates the range of treatment and disposition of the case.

Table 6: NEISS Cases (Un-weighted) of Architectural Glazing Breakage By Years of Treatment and Disposition, 1980*–2013

Year Range	Treated/examined and released	Treated and transferred to another hospital	Treated and admitted for hospitalization (same facility)	Held for observation	Left without being seen or against medical advice	Fatality, including DOA, died in the ED	Not recorded	Total
1980 - 1983	1,630	100	83	0	0	0	2	1,815
1984 - 1987	1,444	21	52	0	0	0	0	1,517
1988 - 1991	1,491	21	38	0	0	0	0	1,550
1992 - 1995	2,076	14	65	0	0	0	2	2,157
1996 - 1999	1,760	21	61	2	0	1	1	1,846
2000 - 2003	1,669	11	45	1	4	0	4	1,734
2004 - 2007	1,472	6	40	8	9	0	0	1,535
2008 - 2011	1,426	7	67	3	9	0	0	1,512
2012 - 2013	599	3	30	1	9	0	0	642
Total	13,567	204	481	15	31	1	9	14,308
Percent	94.8%	1.4%	3.4%	0.1%	0.2%	< 0.1%	0.1%	100%

**NEISS cases are not available for electronic retrieval for 1978 and 1979.*
Source: National Electronic Injury Surveillance System databases, March 2015

Table 7 presents the NEISS data categorized by injury diagnosis, as specified in the NEISS case. Notably, when more than one diagnosis appeared on the emergency department record, the diagnosis that appears to be the most severe is the one coded into the electronic record and presented here. The majority of treated cases involved lacerations (96.3%). Table 8 presents the same data, but cross-categorized by year of incident — presented in 4-year time periods, with the additional 2-year period for the most recent data available.

Table 9 presents the NEISS cases summarized by part of body injured, as specified in the NEISS record. Only the injury deemed most severe is listed in the NEISS record. More than three-quarters (76.9%) of all reported injuries occurred to the hand or arm, in particular, the lower arm and wrist. This seems logical because the hands and arms are used in the act of pushing on the glass or in attempting to ward off contact, if accidentally running/falling into a glass door.

Table 7: NEISS Cases (Un-weighted) of Architectural Glazing Breakage By Injury Diagnosis*, 1980+–2013

Diagnosis	Total	Percent
Lacerations#	13,775	96.3%
Foreign body	200	1.4%
Avulsion	108	0.8%
Puncture	108	0.8%
Internal organ injury	70	0.5%
Hematoma	3	< 0.1%
Other/Not Stated	44	0.3%
Total	14,308	100%

** When more than one diagnosis appeared on the emergency department record, the diagnosis that appears to be the most severe is represented here.*
+ NEISS cases are not available for electronic retrieval for 1978 and 1979.
 # Includes one fatality.
Source: National Electronic Injury Surveillance System databases, March 2015

Table 8: NEISS Cases (Un-weighted) of Architectural Glazing Breakage By Years of Treatment and Injury Diagnosis, 1980*–2013

Year Range	Lacerations (59)	Foreign body (56)	Avulsion (72)	Puncture (63)	Internal organ injury (62)	Hematoma (58)	Other/Not Reported (71)	Total	Percent
1980 - 1983	1,769	19	8	16	1	0	2	1,815	12.7%
1984 - 1987	1,477	17	6	13	3	0	1	1,517	10.6%
1988 - 1991	1,503	16	13	13	1	1	3	1,550	10.8%
1992 - 1995	2,082	28	18	19	7	0	3	2,157	15.1%
1996 - 1999	1,791	26	11	12	3	1	2	1,846	12.9%
2000 - 2003	1,671	31	15	8	4	0	5	1,734	12.1%
2004 - 2007	1,462	22	13	11	16	0	11	1,535	10.7%
2008 - 2011	1,416	27	20	12	25	0	12	1,512	10.6%
2012 - 2013	604	14	4	4	10	1	5	642	4.5
Total	13,775	200	108	108	70	3	44	14,308	100%
Percent	96.3%	1.4%	0.8%	0.8%	0.5%	< 0.1%	0.3%	100%	

** NEISS cases are not available for electronic retrieval for 1978 and 1979.*
Source: National Electronic Injury Surveillance System databases, March 2015

Table 9: NEISS Cases (Un-weighted) of Architectural Glazing Breakage By Part of Body Injured*, 1980+–2013

Source	Total	Percent
Head Injuries	**1,233**	**8.6%**
Face	*764*	
Head	*314*	
Mouth	*49*	
Ear	*23*	
Eyeball	*83*	
Body Injuries	**471**	**3.3%**
Lower trunk	*150*	
Upper trunk#	*145*	
Shoulder	*135*	
Neck	*37*	
Pubic region	*4*	
Arm Injuries	**6,701**	**46.8%**
Lower arm	*3,827*	
Upper arm	*432*	
Wrist	*2,014*	
Elbow	*428*	
Hand Injuries	**4,310**	**30.1%**
Hand	*3,101*	
Finger	*1,209*	
Leg Injuries	**957**	**6.7%**
Lower leg	*475*	
Upper leg	*164*	
Knee	*227*	
Ankle	*91*	
Foot Injuries	**371**	**2.6%**
Foot	*325*	
Toe	*46*	
Multiple body parts	**244**	**1.7%**
25%–50% of body	*208*	
More than 50% of body	*36*	
Not recorded	**21**	**0.1%**
Total	**14,308**	**100%**

** When more than one body part was injured, in general, the emergency department reported the injury that appeared to be the most severe.*
+ NEISS cases are not available for electronic retrieval for 1978 and 1979.
 # Upper trunk injuries total includes one fatality.
Source: National Electronic Injury Surveillance System databases, March 2015

Methodology

NEISS is a probability sample of approximately 100 U.S. hospitals having 24-hour emergency departments ("EDs") and more than six beds. Coders in each hospital code consumer product-related data from the ED record and the data are then transmitted electronically to the CPSC. Because NEISS is a probability sample, each case collected represents a number of cases (the case's *weight*) of the total estimate of injuries in the United States. Different hospitals carry different weights, based on stratification by their annual number of emergency department visits.[10]

Hazard Analysis staff computes estimates and the associated coefficients of variation for the number of architectural glazing breakage injuries. A coefficient of variation (C.V.) is the ratio of the standard error of the estimate (*i.e.*, variability) to the estimate itself. This is generally expressed as a percent. A C.V. of 10 percent means the standard error of the estimate equals 0.1 times the estimate.

CPSC's IPII is a database containing reports of injuries or potential injuries made to the Commission. These reports come from news clips, consumer complaints received by mail or through the CPSC's telephone hotline or website, MECAP reports, letters from lawyers, and similar sources. While the IPII database does not constitute a statistical sample, it can provide CPSC staff with guidance or direction in investigating potential hazards.

CPSC purchases death certificates from all 50 states, New York City, the District of Columbia, and some territories. Only certificates in certain E-codes (based on the World Health Organization's International Classification of Diseases ICD-10 system) are purchased. These reports are then examined for product involvement before being entered into the CPSC's death certificate database. The result is neither a statistical sample, nor a complete count of product-related deaths; nor does the result constitute a national estimate. DTHS provides only counts for product-related deaths from a subset of E-codes. For this reason, these counts tend to be underestimates of the actual numbers of product-related deaths. Death certificate collection from the states also takes time.

CPSC maintains a file that includes summaries of reports of investigations into events surrounding product-related injuries or incidents called the In-Depth Investigations file ("INDP"). Based on victim/witness interviews, the reports provide details about the incident sequence, human behavior, and product involvement.

In response to the Consumer Product Safety Improvement Act, the Consumer Product Safety Risk Management System ("CPSRMS") was developed which combines the data from IPII, DTHS, and INDP into one searchable incident database.

Both CPSRMS and NEISS were searched in March 2015, for incidents with the following product codes:

[10] (Kessler and Schroeder, 1999).

NEISS Code	Title	Years in use: NEISS*	Years in use: INDP, IPII, DTHS
609	Glass bathtub or shower enclosures	72 - current	72 - current
611	Bathtubs or showers (including fixtures or accessories; excluding enclosures, faucets, spigots and towel racks)	72 - current	72 - current
1823	Storm doors with glass panels	72 - 02	72 - 02
1825	Sliding glass doors or panels	72 - 02	72 - 02
1837	Glass doors, not otherwise specified	72 - 78	72 - 78
1849	Doors, not specified	74 - 02	74 - 02
1850	Doors, with glass panels, not storm doors	74 - 78	74 - 78
1859	Storm doors, not otherwise specified	74 - 78	74 - 78
1882	Other glass doors	78 - 02	78 - 02
1883	Glass doors, not specified	78 - 02	78 - 02
1892	Glass doors or doors with glass panels	03 - current	03 - current
1893	Doors, other or not specified	03 - current	03 - current
4030	Bathtub or shower enclosures, not specified	78 - current	78 - current

* *NEISS cases are not available for electronic retrieval for 1978 and 1979.*

TAB C – Health Sciences Memorandum

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

Date: April 1, 2015

TO : Brian M. Baker, Project Manager, Petition CP12-3
Division of Mechanical Engineering
Directorate for Laboratory Sciences

THROUGH : Alice Thaler, Associate Executive Director,
Directorate for Health Sciences

Jacqueline N. Ferrante, Ph.D., Director,
Division of Pharmacology and Physiology Assessment
Directorate for Health Sciences

FROM : Jason R. Goldsmith, Ph.D., Physiologist,
Division of Pharmacology and Physiology Assessment
Directorate for Health Sciences

SUBJECT : Petition CP12-3

This memorandum responds to Petition CP12-3, which requests that the Commission initiate rulemaking to replace the testing procedures for glazing materials in certain architectural products specified in 16 C.F.R. part 1201, *Safety Standard for Architectural Glazing Materials*, with the procedures specified in ANSI Z97.1, *American National Standard for Safety Glazing Materials Used in Building – Safety Performance Specifications and Methods of Test*.

DISCUSSION:

Injuries from Non-Safety Architectural Glazing Materials

When subjected to sufficient impact force, architectural glazing materials that do not meet the mandatory safety standard will break into numerous sharp, jagged, fragments, some of which may be retained in the frame of the product. Laceration injuries are the most common injury associated with this product class, and these injuries range in severity from superficial lacerations to more severe lacerations that involve underlying structures, such as tendons, nerves, muscles, and/or blood vessels. Sharp fragments may also produce

dagger-like puncture or penetration wounds, which can affect the above-named tissues, as well as deeper internal organs. The more severe injuries can require extensive surgery and rehabilitation, and they can result in varying degrees of loss of sensation and motion, disfigurement, and emotional trauma. Fatalities are likely to result in those cases in which blood vessels are severed or internal organs are damaged.

In contrast to non-safety architectural glazing materials, safety glazing materials or "safety glass" (*i.e.*, glass that meets the mandatory standard) is considered safe because it resists breakage; breaks into substantially smaller, less harmful fragments (*i.e.*, tempered glass); or breaks, but is held in place by one or more layers (*i.e.*, laminated glass); and therefore, safety glass does not pose the same laceration, puncture, or penetration hazard as non-safety glazing materials. Injuries from safety glass are likely to be limited to minor lacerations, abrasions, or contusions of the skin only.

The purpose of the mandatory standard was to eliminate or reduce the lacerations, contusions, abrasions, and other injuries or deaths that resulted from (1) walking or running into glazed doors that appeared to be open; glazed panels mistaken to be a means of ingress or egress; or pushing against glazing materials in doors or glazed panels to open a door; (2) accidentally falling into or through glazed doors, sliding glass doors, glazed panels, and bathtub or shower doors and their enclosures; and (3) installing, replacing, storing, or manipulating glazing material in doors, sliding glass doors, glazed panels, and bathtub or shower doors and their enclosures, or the broken glazing material from any of these products.

Prior to enactment of the mandatory standard, an estimated 190,000 injuries were treated in hospital emergency rooms during 1975, which were associated with architectural glazing materials in the architectural products within the scope of the standard.[11] Approximately 2,400 of these injuries required patients to be hospitalized. Children ages 14 and under represented approximately one-half of the injured, despite the group making up less than 30 percent of the population.[12]

Incident Data

The majority of incidents treated in hospital emergency departments during the 1980 to 2011 time period involved laceration injuries. Injury severity ranged from minor

[11] United States Consumer Product Safety Commission *CPSC Seeks To Amend Architectural Glazing Safety Standard* Press Release #77-101U.S. CPSC 1977.

[12] David, J-A *Hazard Analysis* Memorandum United States Consumer Product Safety Commission 1993.

lacerations, abrasions, and contusions, to more severe laceration, puncture, and penetration injuries. The parts of the body most often involved in these incidents were the arm (46.8%), hand (30.1%), head (8.6%), and leg (6.7%). The incidents captured in NEISS suggest that the most severe injuries (*i.e.*, injuries that necessitated transfer to another hospital or admission to the hospital where emergency room treatment was provided) represented approximately 5 percent of the total.

Although many incidents lacked detailed information about the injury, a review of the incidents from the CPSC databases suggests that many of the injuries and deaths resulted from products that did not meet the mandatory standard; the deep laceration injuries, and puncture and penetration wounds reported in these incidents, some of which were fatal, most likely only would have resulted from the large glass fragments produced by the breakage of non-safety glass.

Hazard Analysis staff estimates that the number of architectural glazing breakage injuries treated in hospital emergency departments has decreased in the last 23 years. Unfortunately, due to changes made to the NEISS system in the early 1990s, it is not possible to compare the annual estimates made in the last 23 years to those preceding the changes, or, more specifically, to the estimated 190,000 for the 1-year period just prior to enactment of the federal standard (1975). Whereas, a reduction in injuries is a likely consequence of enacting the mandatory standard in 1977, it is unclear from the data at hand to what extent anomalies in the NEISS system (*e.g.*, changes in the NEISS hospitals reporting), changes in coding, different statistical methodologies used in analysis, and/or other explanations, may account for the magnitude of the reported reduction.

Review of the Medical Literature

The nature of the injuries resulting from impact with non-safety architectural glazing products has been well documented in the medical literature, and in particular, by the medical community within countries that lack standards to address the hazard adequately.

In 1981, Jackson examined glass injuries to children that were serious enough to require admission to the Royal Victoria Infirmary (Newcastle upon Tyne, England) during the years 1973 through 1980. Of the 62 incidents meeting the study criteria, 30 were related to architectural glazing in doors or windows[13]; 26 of the incidents occurred in houses. The injured were most often older children, with a peak in the 5 to 9 years old age group, and were largely male (81 percent). Relative to the injuries suffered as a result of contact with other types of glass, such as broken pieces of glass, bottles, and drinking glasses, Jackson

[13] Note: the glass in windows is not subject to either the mandatory or voluntary standard.

characterized the injuries from architectural glass as the most serious in nature, which in this series included the death of one child. The author found that the children injured by architectural glazing materials were more likely to receive injuries to the trunk or proximal parts of the limbs. The main injuries were to soft tissue (10), arteries (9), nerves (4), tendons (4), and viscera (3).

Maitra and Han (1989) expanded upon the work of Jackson, examining the records of 918 patients of all ages, who visited the emergency department of the Royal Victoria Infirmary during 1985 for glass-related injuries. Forty percent of these patients were found to have received their injuries from architectural glazing materials. The mean age of those in this subgroup was 23.9 years, and males were injured at a rate three times greater than females. The most common injury location was the upper arm and forearm. The authors note that architectural glass caused more severe injuries, involving muscles, tendons, nerves, and blood vessels, and they noted that a significantly higher proportion of patients received multiple wounds from architectural glass than patients injured by non-architectural glass.

Injuries to the hand resulting from moving through glass were the focus of a prospective study by Irwin et al. (1996), who during a 1-year period identified 87 patients who sought treatment for such injuries at either Shotley Bridge District General Hospital or Sunderland District General Hospital (England). Of the 87 patients, 74 received their injuries from architectural glass — 40 doors and 34 windows. The mean age of the injured was 21.7 years, and males accounted for 96 percent of the injured. Alcohol was associated with 73 percent of the incidents, and deliberate movement through architectural glass was reported in 51 percent of the incidents; 28 patients admitted having deliberately punched at the glass. The 48 patients who claimed that their injuries were the result of accidental contact included all seven of the children in the series. Injuries included damage to the muscles, tendons, nerves, arteries, volar plate (a thick ligament that separates the joint space of the first knuckle of the finger and the underlying flexor tendons), and skin. All but one of the injuries required surgical intervention; 80 percent of the surgical procedures required a general anesthetic, and the mean time in the operating room was 70 minutes. The authors emphasized the economic burden represented by these injuries, both in terms of the necessary treatment (considerable amount of operating time and expertise, and lengthy rehabilitation times) and the hours of work that were lost.

In a retrospective analysis of NEISS data for door-related injuries to children (age 17 or under) during the period 1999 to 2008, Algaze et al. (2012) found that only 7.4 percent of the injuries involved glass doors, but that such patients were twice as likely to be admitted to the hospital for serious lacerations as patients injured by non-glass doors. Patients who were admitted were most frequently treated for amputations (32 percent) or lacerations (25 percent). The frequency of the injuries associated with glass doors jumped

significantly with increasing age; the opposite was true for doors of other types. The authors attributed the greater injury rate among older children with glass doors to a combination of factors that include the children's greater weight, strength (ability to break the glass), and risk-taking behaviors. The authors mention that at least some of the injuries reported about in their study may have involved inebriation and the deliberate punching of the door's glass panels.

A 2001 study of fatalities by Karger et al., provides significant insight into the serious nature of the injuries that may result from impacting non-safety architectural glazing materials. In this study, the authors examined retrospectively 799 consecutive autopsies of victims of sharp force that were performed between 1967 and 1996 in Munster and Berlin, Germany, for cases classified as accidents. Eighteen cases were found, and one additional case meeting the same criteria and occurring at the time the study was performed was included as well. Of the 19 cases, 14 involved impacts with architectural glass.

Many of the victims had multiple scratches, abrasions, and superficial incisions; and at least one deep tear, laceration, or puncture injury. Eight suffered transections of arteries and/or veins; two received puncture wounds of organs (brain and liver); and four died from unspecified incisions to their faces (2) or limbs (2). In some cases, the major wounds were described as a clean cut with small tags and notches; and in other cases, the wounds were described as irregular and jagged with abrasions in the margins of the wound. In the majority of cases, death was attributed to exsanguination (the loss of circulating blood).

The fatal wounds were caused by what the authors termed: (1) "large and dagger-like slivers of glass" that produced stabbing-type injury, (2) sharp-edged fragments of glass that remained inside the frame and produced a large, cutting injury, or (3) a fragment of glass that, upon falling, impacted the victim in a manner similar to a guillotine, causing a transection of a body part. In some cases, a tearing component was also present in the wound, which the authors attributed to the victim's instinctive motions to remove themselves from the glass. As in other studies, inebriation was a common factor in this series, with all but one victim inebriated at the time of the incident; the exception was a 13-year-old male, the youngest in this series. The nature of this young man's incident and the injury he suffered are useful to discuss in greater detail because the details illustrate a common incident scenario, response by the victim, injury, and outcome.

While playing with an older brother, the 13-year-old victim attempted to push open a door with a large glass panel by pressing both of his hands against the glass. This caused the glass to shatter, at which time both of his arms continued their forward motion, projecting through the glass. As he immediately attempted to retreat from the shattered glass panel, his right axilla was deeply and cleanly cut by a blade-like fragment of glass that had remained within the door panel. Both his axillary artery and vein were severed, leading to

rapid exsanguination. As was the case with this young man, Karger et al. describe the wounding agent in these incidents not as a knife or sharp tool that is in motion, but rather, the motion of the victims themselves. The forces that are imparted by the impact of the victim with the glass are sufficient to shatter the glass and produce the sharp fragments or fragments with cutting edges that the victim's motion then causes to be driven into, through, or across the tissues of their body.

These studies and others, as well as the CPSC incident data, define the severe nature of the injuries that can result from non-safety architectural glazing products. Although there may be uncertainty about how great the injury rate has changed since enactment of the mandatory standard, it is clear that there are a significant number of these injuries occurring each year, and, on average, at least three deaths occur per year.

In the majority of cases, it was not possible to determine from the incident data whether the architectural glazing products involved in these incidents may have been manufactured prior to the enactment of the mandatory standard, or subsequent to its enactment, and, if the latter, whether they may have been improperly tested, not tested at all, or were considered exempt from testing. There is also insufficient detail in the incident data to determine the relative contributions that the mandatory and voluntary standards may have contributed to any change in the injury rate or the types of injuries that have occurred over time.

CONCLUSION:

Impact with non-safety architectural glazing materials and the products that incorporate these materials has the potential to produce severe laceration, puncture, and penetration injuries, some of which may prove fatal. The mass and motion of the body are critical determinants in whether the impact with the glass will lead to its shattering. Consequently, individuals receiving injuries from this product class are most often the young (including older children), and they are predominantly males. It has been postulated that the increased mass and risk-taking behavior of older children likely accounts for the greater frequency of these injuries in older children than younger children. Moreover, the increased risk-taking behavior and alcohol consumption may play a role in the preponderance of incidents among younger adults.

After the non-safety architectural glazing materials shatter, it is most often the continued momentum of the individual that drives the glass fragments into, through, or across the tissues of the body, producing severe laceration, puncture, or penetration injuries, some of which can be fatal. Wounds can involve the skin and the underlying muscles, tendons, nerves, and blood vessels; require extensive medical treatment, wound management, and

long-term rehabilitation; and may leave the victim disfigured, functionally impaired, and psychologically traumatized.

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TAB D – Engineering Sciences Memorandum

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

Date: April 10, 2015

TO : Brian M. Baker, Mechanical Engineer, Project Manager - Petition CP12-3
Division of Mechanical Engineering
Directorate for Laboratory Sciences

THROUGH : Joel Recht, Associate Executive Director
Directorate for Engineering Sciences

Mark Kumagai, Director
Division of Mechanical Engineering
Directorate for Engineering Sciences

FROM : Thomas E. Caton, General Engineer
Division of Mechanical Engineering
Directorate of Engineering Sciences

SUBJECT : Petition CP12-3

This memorandum provides a technical comparison of the testing procedures and equipment prescribed in section 1201.4 to ANSI Z97.1-2009$^{\epsilon 2}$. By way of background, the standard for architectural glazing materials (16 C.F.R. part 1201) prescribes tests to ensure that these products do not break when impacted with a specific force, or break with such characteristics that they are less likely than other glazing materials to present an unreasonable risk of injury. "Glazing materials" are defined in the mandatory standard as "glass, including annealed glass, organic coated glass, tempered glass, laminated glass, wired glass or combination thereof where these are used." 16 C.F.R. § 1201.2(a)(11). Plastic glazing materials were originally included in the mandatory standard, but testing of plastic glazing materials was removed from 16 C.F.R. part 1201 by Commission action in 1980 and 1982. The architectural products that are required to use glazing materials that satisfy the testing procedures are identified as "storm doors or combination doors, doors, bathtub doors and enclosures, shower doors and enclosures, and sliding glass doors (patio-type)." 16 C.F.R. § 1201.1(a).

Comparison of Test Procedures in 16 C.F.R. Part 1201 and ANSI Z97.1-2009$^{\epsilon 2}$

CPSC staff compared 16 C.F.R. 1201 and ANSI Z97.1–2009$^{\epsilon 2}$. As discussed above, the testing procedures set forth in section 1201.4 have not been modified or updated (aside from amendments to the standard and the revocation of tests procedures for plastic glazing in the early 1980s) since they were originally promulgated in 1977. In contrast, ANSI Z97.1 has been revised periodically several times since 1977.

In its present form, 16 C.F.R. part 1201 specifies obsolete ASTM standard practices that have been replaced. The replaced standard practice is ASTM G26-70 - *Practice for Operating Light Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials*, which was withdrawn by ASTM in 2000, and replaced with ASTM G155 - *Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials*. The regulation at 16 C.F.R. part 1201 references the obsolete 1970 edition of ASTM D2565-70 - *Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications,* which has been revised over the years; its current edition is ASTM D2565-99(2008).

The use of these withdrawn and obsolete versions of current standards can result in increased costs and duplication of effort if manufactures are required to test to the earlier versions and the current versions of these standard practice test procedures. Furthermore, 16 C.F.R. part 1201 has not been adjusted for the obsolescence of equipment and the replacement of that equipment with currently manufactured test equipment. The adoption of the ANSI Z97.1 test procedures in place of the current mandatory standard test procedures would allow the use of currently manufactured test equipment, rather than the obsolete and outdated equipment referenced in section 1201.4.

The impact tests of 16 C.F.R. part 1201 and ANSI Z97.1-2009$^{\epsilon 2}$ are similar. The impact test structure/frame is similarly constructed. Figure 1 in 16 C.F.R. 1201 shows a drawing of an Impact Test Structure that is similar to the drawing of the Impact Test Frame drawing in ANSI Z97.1-2009,$^{\epsilon 2}$ except for differences in the descriptive terms used for naming the parts of the test apparatus, *i.e.*, Main Frame and Sub-Frame in ANSI Z97.1-2009,$^{\epsilon 2}$ versus 16 C.F.R. part 1201's Impact Test Structure and Test Specimen Mounting Frame. ANSI Z97.1-2009$^{\epsilon 2}$ provides enlarged drawings of the Impact Test Frame compared to the 16 C.F.R. part 1201 drawings of the Glass Impact Test Structure. Overall, the Glass Impact Test Structure of 16 C.F.R. 1201 appears to be of similar construction to the ANSI Z97.1-2009$^{\epsilon 2}$ Impact Test Frame, except that ANSI Z97.1-2009$^{\epsilon 2}$ provides clearer assembly drawings. ANSI Z97.1-2009$^{\epsilon 2}$ also provides test frame assembly and impact test instructions for bent glass that is not included in 16 C.F.R. part 1201.

The mandatory standard at 16 C.F.R. part 1201 provides two impact categories, 150 foot-pound impact test (Category I) and 400 foot-pound impact test (Category II). Wired glass used in doors or other assemblies to retard the passage of fire is exempt from the testing procedures set forth in section 1201.4. By contrast, ANSI Z97.1 provides three impact categories, a 400 foot-pound impact test (Class A), a 150 foot-pound impact test (Class B), and a 100 foot-pound impact test (Class C) for fire-resistant wired glass. Section 1201.1(c)(1) provides that "wired glass is used in doors or other assemblies to retard the passage of fire, where such door or assembly, is required by a federal, state, local, or municipal fire ordinance" is exempt from the standard. As previously noted, staff recommends changing the test method and not the scope of the mandatory standard; thus the exemption of wired glass from the mandatory standard would continue.

ANSI Z97.1-2009ϵ2 differs from 16 C.F.R. part 1201 because the ANSI standard contains tests for the impact testing of bent glass, which are not included in 16 C.F.R. part 1201. For flat specimens, both 16 C.F.R. part 1201 and ANSI Z97.1-2009ϵ2 provide for use of a 3-inch diameter steel sphere for evaluating any hole remaining in an impact-tested specimen after the impact test. However, the standards differ because 16 C.F.R. part 1201 requires that the specimen be evaluated in a horizontal position after the vertical test is completed, while ANSI Z97.1-2009ϵ2 requires that the impacted specimen remain in the vertical, upright as-impact tested position while being evaluated with the 3-inch diameter steel sphere. The regulation at 16 C.F.R. part 1201 does not indicate the number of specimens to be impact tested; rather the standard requires only that the largest size and each thickness offered by the manufacturer are to be tested. On the other hand, ANSI Z97.1-2009ϵ2 requires that four specimens of each size and thickness are to be impact tested.

ANSI Z97.1-2009ϵ2 is more comprehensive for tempered glass specimens than 16 C.F.R. part 1201 because the voluntary standard provides a means for evaluating tempered glass specimens that did not fracture as a result of the Class A impact test. This test is the Center Punch Fragmentation Test that purposely fractures the unbroken, impact-tested tempered glass specimen with a center punch and hammer. The fractured pieces of the tempered glass specimen are evaluated by weighing the 10 largest fragments. A tempered glass specimen is considered to conform to ANSI Z97.1-2009ϵ2 as acceptable for use as safety glazing if the 10 fragments weigh no more than the equivalent of 10 in^2 of the original unbroken specimen, combined with no fragments longer than 4 inches in length. The regulation at 16 C.F.R. part 1201 does not provide an equivalent test to the Center Punch Fragmentation Test.

In addition, 16 C.F.R. part 1201 provides for accelerated environmental durability testing of laminated glass and organic-coated glass but exempts tempered glass, wired glass, and annealed glass. Additionally, 16 C.F.R. part 1201 does not provide for accelerated

environmental durability testing of plastic glazing materials because those tests were removed from 16 C.F.R. part 1201 by the Commission in the early 1980s. ANSI Z97.1-2009$^{\epsilon 2}$ lists organic–coated glass, tempered glass, laminated glazing, plastic glazing, and fire-resistant wired-glass and does not appear to exempt any specific glazing materials as 16 C.F.R. part 1201 does. However, amending the standard as petitioner requests would not alter the scope of the mandatory standard, so products that are exempt from 16 C.F.R part 1201 would continue to be exempt.

If the Scope and Definitions of 16 C.F.R. part 1201 are retained with only the Test Specifications of ANSI Z97.1-2009$^{\epsilon 2}$ replacing the Test Procedures at 16 C.F.R. §1201.4, the result will be a more comprehensive 16 C.F.R. part 1201. A more comprehensive 16 C.F.R. part 1201 would include the Center Punch Fragmentation evaluation for a tempered glass glazing product as well as increase the number of test specimens required to conduct testing. Impact specimens that do not fracture when tested to 400 foot-pounds are considered as conforming by the requirements of 16 C.F.R. part 1201, while ANSI Z97.1-2009$^{\epsilon 2}$ continues the evaluation with a Center Punch Fragmentation Test to determine if the specimen fractures into sufficiently small pieces to be considered as conforming to the requirements of ANSI Z97.1-2009$^{\epsilon 2}$.

Currently industry must certify to both 16 C.F.R. part 1201 and the ANSI standard due to multiple building code requirements across different states. The recommended changes would reduce the total number of samples needed, by eliminating duplicate testing.

Recommendations

The ANSI standard provides the most current requirements and modern methodologies, to date, for the materials covered by the CPSC standard. The ANSI standard specifies clearly the key testing criteria, such as the number of test specimens. Amending the mandatory standard to replace its testing procedures with those in the voluntary standard will result in a comparable testing procedure.

References

16 CFR 1201, Safety Standard for Architectural Glazing Materials

16 CFR 1201.1, Scope, application and findings

16 CFR 1201.40, Interpretation concerning bathtub and shower doors and enclosures

45 FR 66002, October 6, 1980

47 FR 27853, June 28, 1982

American National Standards Institute standard ANSI Z97.1-2009$^{\epsilon 2}$ Safety Glazing Materials Used in
Buildings-Safety Performance Specifications and Methods of Test, 2009, pp.12-36

ASTM Annual Book of ASTM Standards, Section 00, , Volume 00.01 Subject Index; Alphanumeric List, (West Conshohocken, PA: ASTM International, 2012)

16 CFR 1201.1(d), "The Commission's findings apply to the architectural glazing standard as issued at 42 FR 1428, on January 6, 1977. Since that date, the Commission has revoked portions of the standard which prescribed requirements for ''glazed panels'' (45 FR 67383, August 28, 1980); an accelerated environmental durability test for plastic glazing materials intended for outdoor exposure (45 FR 66002, October 6, 1980); and a modulus of elasticity test, a hardness test, and an indoor aging test applicable to plastic glazing materials (47 FR 27856, June 28, 1982)."

TAB E – Initial Regulatory Flexibility Analysis

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814

Memorandum

Date: April 2, 2015

TO : Brian M. Baker, Project Manager
Division of Mechanical Engineering
Directorate for Laboratory Sciences

THROUGH : Gregory B. Rodgers, Ph.D., Associate Executive Director,
Directorate for Economic Analysis

Deborah V. Aiken, Ph.D., Senior Staff Coordinator,
Directorate for Economic Analysis

FROM : Robert Squibb, Directorate for Economic Analysis

SUBJECT : Assessment of Small Business Impacts for Proposed Revision of 16 C.F.R. Part 1201

Background

The U. S. Consumer Product Safety Commission ("CPSC" or "Commission") granted a petition from the Safety Glazing Certification Council ("SGCC") asking the Commission to amend 16 C.F.R. part 1201, *Safety Standard for Architectural Glazing Materials*, and replace section 1201.4 with the corresponding sections of the current American National Standards Institute ("ANSI") safety glazing standard, ANSI Z97.1-2009€2.These sections deal with the testing procedures prescribed by the standard.

The Regulatory Flexibility Act ("RFA") requires that proposed rules be reviewed for their potential economic impact on small entities, including small businesses, to determine whether the proposed rule will cause or may cause a significant economic impact for a substantial number of small firms. The purpose of this memorandum is to consider the impacts of the revision of 16 C.F.R. § 1201.4 on small businesses. In summary, we are able to demonstrate that the revisions to the standard will be cost neutral or cost saving for the overwhelming majority of the small producers in the architectural glazing industry. Thus, the Commission could certify that the proposed revisions will not have a significant impact on a substantial number of small entities.

Differences between ANSI Z97.1-2009€2 and 16 C.F.R. Part 1201

Current federal regulations (16 C.F.R. part 1201) require the testing of architectural glazing materials used in storm or combination doors, bathtub and shower doors and enclosures, and sliding glass doors. There are several differences between the mandatory standard, 16 C.F.R. part 1201, and the current voluntary standard (ANSI Z97.1-2009€2). In contrast to the mandatory requirements, the ANSI standard includes weathering tests for laminated products and requires a center-punch test to bring all samples to failure. The ANSI standard also requires impact testing for four specimens of each thickness and size, whereas the mandatory standard sets no minimum for the number of samples to be tested. The regulation at 16 C.F.R. part 1201 references environmental and weathering factors affecting glass, but the mandatory standard provides no instructions for testing those effects. In contrast, the voluntary standard provides instructions for weathering glazing samples and testing for the effects of weathering. In addition, some of the equipment and standard practices referenced in 16 C.F.R. part 1201 are out of date. There will be no change to the scope of the mandatory standard — the NPR merely updates the test method.

Market for Architectural Glazing

Architectural glazing is a type of glass building material, typically strengthened through one of several processes, including, but not limited to, annealing, laminating, tempering, toughening, heat strengthening, and chemical strengthening. Glazing products are commonly used as a type of structural glass, thereby making such products suitable for use in storm doors, bathtub and shower doors, and sliding glass doors, among other uses. Safety glazing is designed so that it does not break apart when struck, or it is designed to break into small pieces to minimize the hazards associated with broken glass.

The SGCC estimates that they manage the certification testing for approximately 70 percent of the industry. As of June 2014, SGCC certified 1,874 individual products from 293 participating plant locations. The SGCC estimates imply a total market size of about 2,650 (1,874 ÷ 0.70) individual products and about 420 (293 ÷ 0.70) manufacturing facilities, assuming those manufacturers certified by SGCC are representative of the market. The Glass Association of North America ("GANA") estimated in a comment on a separate notice of proposed rulemaking in 2011 that there were around 400 glass manufacturing plants in the architectural glazing

market, which is generally consistent with the estimate from SGCC.[14] Both GANA's and SGCC's websites provide lists of individual manufacturers, totaling approximately 250 manufacturers in the market. SGCC provides certification information for its customers; certification was identified for other manufacturers based on the information provided by those manufacturers on websites and other sources.

SBA guidelines categorize manufacturers of flat glass as small, if they have fewer than 1,000 employees, and categorize manufacturers of products made with purchased glass as small, if they have fewer than 500 employees. In cases where firms fall under both categories, the size standard for flat glass manufacturers was applied to classify the firm. Based on these criteria, staff identified 104 small manufacturers of architectural glazing materials. The sizes of 10 additional firms could not be determined. Of the 104 small manufacturers known to produce architectural glass, 84 certify their products through the SGCC; 20 small manufacturers certify their products through other means.

Compliance with ANSI Z97.1-2009€2 and 16 C.F.R. Part 1201

It is typical for manufacturers in the architectural glazing industry to certify their products to ANSI Z97.1-2009,€2 as well as 16 C.F.R. part 1201. Of the products certified through SGCC, 99 percent or 1,855 products were certified to both ANSI Z97.1-2009€2 and 16 C.F.R. part 1201. Only 12 products (0.6%) were certified solely to ANSI Z97.1-2009,€2 and seven products (0.4%) were certified solely to 16 C.F.R. part 1201. A review of manufacturers from GANA's membership not participating in the SGCC program indicated that of the 35 manufacturers that provided certification information, 32 manufactures certified to both standards and three manufacturers listed certification only to 16 C.F.R. part 1201.

Regarding the 104 small domestic manufacturers, 102 certify to both standards, while only 2 certify solely to 16 C.F.R. part 1201.

In correspondence with CPSC, SGCC pointed out that one of the reasons for the high level of compliance with both standards is that different industrial codes often reference different standards that finished products must meet. For example, elevator

[14] Public comment from the Glass Association of North America submitted in response to the notice of proposed rulemaking on the testing and certification rule (16 C.F.R. part 1107).

codes reference ANSI Z97.1-2009,€2 while building codes[15] often reference 16 C.F.R. part 1201. International codes are not consistent in the standards they reference. Because manufacturers do not necessarily fabricate flat glass panels for a specific end-use, it is prudent practice for manufacturers to test and certify to both standards.

Impact on Small Businesses

The expected impact of the proposed rule is to reduce the costs of certification for most manufacturers. The 102 of 104 small manufacturers currently testing to both the voluntary and the federal standard will probably experience a decrease in testing and certification costs because they would only need to follow one testing protocol to certify to both standards. This reduces the number of samples a manufacturer needs to fabricate for testing, thus directly reducing certification costs. In addition, for manufacturers who contract out their testing, shipping costs will be reduced due to the smaller number of samples shipped.

The SGCC estimates that its customers would each save an average of $1,284 per product tested annually. [16] Manufacturers outside SGCC's membership who currently test to both standards will also likely see cost savings. However, if they currently conduct their testing in-house, they do not incur the costs of shipping samples to SGCC; and thus, the cost savings will be limited to the savings from fabricating fewer testing samples.

One of the two small domestic manufacturers that does not certify to both standards is listed under SGCC's certified products directory and tests products to 16 C.F.R. part 1201 only. The way SGCC structures its fees, testing to ANSI Z97.1-2009€2 and 16 C.F.R. part 1201 currently costs the manufacturer the same. Thus, this manufacturer should not experience an increase in testing fees due to aligning 16 C.F.R. part 1201's testing protocol with ANSI Z97.1-2009.€2 However, there probably will be an increase in costs associated with the shipping and fabrication of the higher number of mandatory samples to be tested under ANSI Z97.1-2009.€2

Of those small manufacturers identified outside of SGCC, only one was found to have products tested to 16 C.F.R. part 1201 exclusively, according to certification

[15] International Code Council- International Building Code. http://archive.org/stream/gov.law.icc.ibc.2012/icc.ibc.2012#page/n555/mode/2up.

[16] Information is courtesy of communications between CPSC staff and SGCC, July 11, 2014.

information readily available. This small manufacturer contracts out for certification to a lab that conducts testing to both standards. Therefore, this manufacturer should not incur any significant increase due to testing fees. However, this manufacturer could experience some increase in shipping and fabricating costs, as identified above.

In summary, 102 of 104 small architectural glazing producers (or about 98 percent of the small producers) will experience some slight cost savings or no impact due to the proposed revisions. Consequently, the Commission could certify that the proposed rule will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

There is no paperwork collection burden associated with 16 C.F.R. part 1201, and the proposed changes to the regulations do nothing to alter that assessment. Consequently, staff expects no additional paperwork burden as a result of the proposed amendments.

Environmental Impact

The National Environmental Policy Act requires the Commission to consider the impact of its actions on the environment. This proposed rule is categorically exempt from the requirement of an environmental impact assessment, per 16 C.F.R. § 1021.5(c)(1) because the proposed rule constitutes a revision of a rule or safety standard providing design or performance requirements for products. However, the proposed rule will decrease the number of samples that most manufacturers are required to test and likely will lead to a small, beneficial effect on the environment, as waste produced by the manufacture of excess samples, and the transport of those samples, will be reduced.